

CHAPTER SEVEN

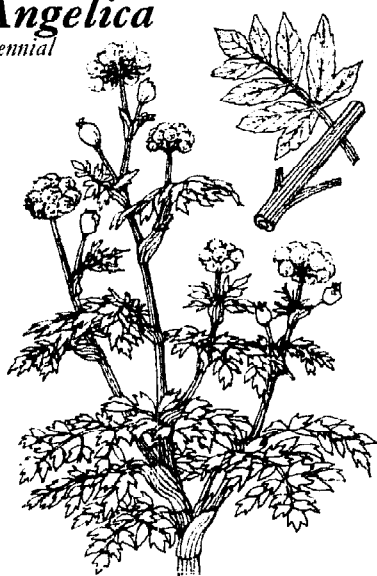
The Cultivation of Herbs



*Containing the sowing, growing
and harvesting instructions for the many
useful herbs that can be nurtured
in the kitchen garden.*

Angelica

Biennial



Angelica takes up a lot of space; the plants can reach six feet (1.8 m) high and are quite imposing. If your space for herbs is in any way limited, this is one you can think of doing without. The leaf stalks can be candied or crystallised, and the roots and stems can be cooked with stewed fruit to provide natural sweetness.

Soil

Angelica is best grown at the back of the herb garden, in deep rich soil and partial shade.

Propagation and after-care

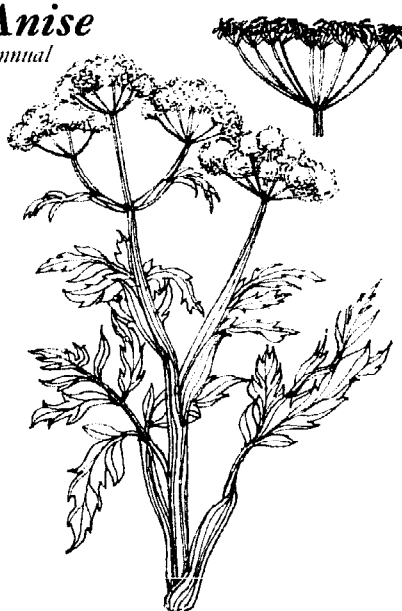
The seed does not keep very long; to make sure of good results I pick the seed fresh and ripe in the autumn, seal it up in an airtight container and sow it early in the spring an inch (2.5 cm) deep in moist soil. The seeds will take a long time to come up. Seedlings should be given six inches (15 cm) of space toward the end of the first year, two feet (60 cm) in the second and anything up to five feet (1.5 m) after that. Angelica usually flowers in its second year, so strictly speaking it is biennial. However, sometimes it does not flower until its fourth or fifth year. After it has flowered the plant will die.

Harvesting

If you want to harvest the leaves, cut them in early summer when the oils are strongest. As well as eating the leaves as a vegetable, you can dry them very successfully. Leaf stalks for candying should be picked at the same time as the leaves. As for roots, dig them up in the second autumn, because they become too woody after that.

Anise

Annual



Anise seed can be baked into cookies and cake, and used to flavor cheeses, desserts, candies and cordials with its delicate licorice scent. An ounce (28g) of seed in a half a pint (300 ml) of brandy, allowed to stand in the sun for two weeks, makes a fortifying drink.

Soil

Anise likes warm, well-drained soil, and a sunny position.

Propagation and after-care

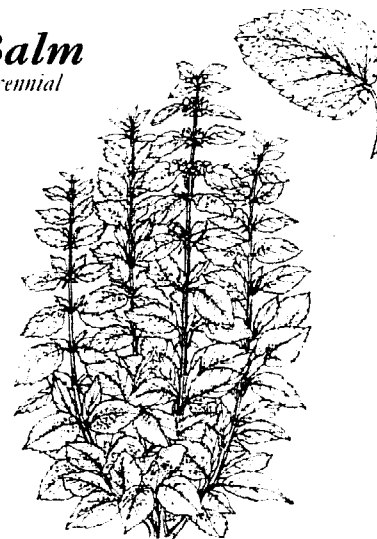
Sow seeds in spring *in situ*, thinning when the plants are established to eight inches (20 cm) apart. Take care when thinning, because the herb is easily damaged. The more sun the seeds get, the more quickly they will mature.

Harvesting

You should be able to harvest in mid-summer, when the seed heads have turned gray-brown. Cut the stalks, tie them in bunches and hang them up to dry them out. Thresh them when they are thoroughly dried. Save some of the seed to sow the following spring.

Balm

Perennial



Balm, or lemon balm, as it is sometimes called, adds a subtle flavor to fruit salads or cooked fruit and is good when added to poultry stuffing. Its pleasant smell recommends it to makers of *pot-pourri* and the scent lasts for a very long time. If you have it in your garden it will attract bees, which is a good thing because they will pollinate your vegetables.

Soil

Balm likes shady places and rich moist soil, but it needs a little sun to prevent it getting stringy and blanched.

Propagation and after-care

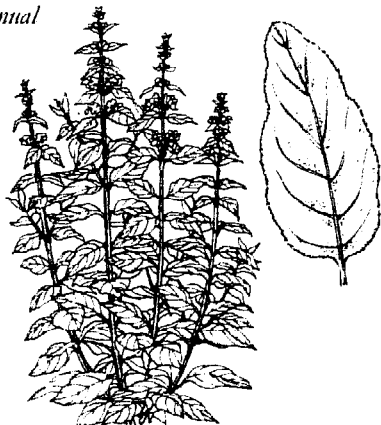
Sow seed in spring or early summer indoors or in a cold frame. It will take three or four weeks to germinate. Plant out when the seedlings are four inches (10 cm) high. Alternatively, sow seed outdoors in midsummer, then lift and replace the seedlings early the following summer.

If you have an existing clump or can buy or beg one, divide it up and plant the portions in the autumn or spring. Balm divides easily into clumps. There is no difficulty in looking after it.

Harvesting

Harvest some leaves just before the buds flower, and then cut the plants right down in the autumn and cover them with compost or leaf-mold.

Balm bruises easily so be careful when picking and don't expect too much during the first year's growth. Dry it in a dark airy room and store in sealed jars in the dark.

Basil*Annual*

In cool climates basil must be sown every year, because frost will kill it. In warm climates you may be able to turn it into a perennial by cutting it right back in the autumn, so that it shoots up in the spring. Basil grows very well in containers indoors.

Basil leaves have a strong flavor and used in large enough quantities will dominate even garlic. In France many cooks steep basil leaves in olive oil and keep this for dressing salads.

Soil

Basil needs dry, light, well-drained soil. A sunny but sheltered position is what it likes best.

Propagation and after-care

Sow seed indoors in early summer. Wait until the soil is warm before planting out the seedlings, eight inches (20 cm) apart in rows a foot (30 cm) apart. Water the plants well, to keep the leaves succulent.

Harvesting

Pick off leaves as soon as they unfurl and use them fresh. Cut the plants down for drying in late summer or early fall: basil takes longer to dry than most herbs.

Bay*Perennial*

Bay has a hundred uses in the kitchen and because it is evergreen there is no problem about storing. Freshly dried leaves to put with pickled herrings, with stews, casseroles and soups, should always be available.

Soil and climate

Bay will do well on any average soil. It likes some sun, but needs sheltering from harsh winds. Bay is susceptible to frost, so in cold climates you should grow it in tubs which can be moved indoors in winter. Add compost occasionally, and some bone meal or other material which contains phosphate.

Propagation and after-care

You can buy a young tree and plant it in the winter, or you can propagate it easily from hardwood cuttings or half-ripened shoots.

Harvesting

Pick leaves fresh all year round. You must dry them before you can eat them. Dry them in layers (see p. 216) in a warm shady place. Never dry them in full sun. If the leaves begin to curl, press them gently under a board. After two weeks drying put them into airtight containers, preferably glass jars, because the leaves exude oil.

Borage*Annual*

Both the flowers and the leaves of borage are used in many different cool drinks, as they contain viscous juices which actually make the drinks cooler. You can sprinkle the blue flowers over salads, or use them for a tisane. The plant is very decorative.

Soil

Borage will grow on any piece of spare ground, but it likes sun, and prefers a well-drained loamy soil.

Propagation and after-care

Borage can only be propagated from seed. Sow the seed in spring, in drills one inch (2.5 cm) deep and three feet (90 cm) apart. Cover the seed well with soil. The plant will self-sow.

Harvesting

Eight weeks after sowing begin cutting the young leaves and keep cutting from then on. Pick the flowers when they appear. You may get two flowerings in one season. Dry quickly at a low temperature.

Burnet*Perennial*

Use fresh young burnet leaves chopped up in salads or as a flavoring in sauces. Add the leaves to cream cheese, where they enhance the cool taste. Dried leaves are well worth adding to vinegar, and they can also be used to make a fragrant tea.

Soil and climate

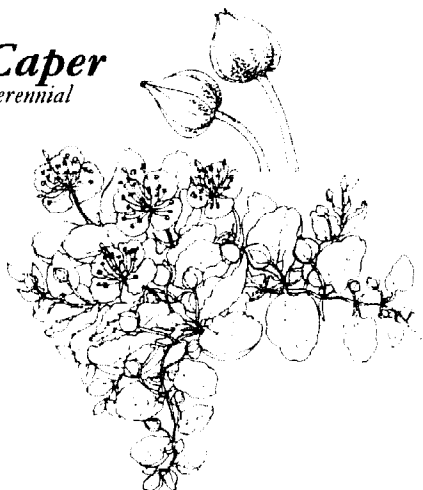
A dry light well-limed soil suits burnet best. The plants need full sun in order to flourish. But burnet is hardy and will do well in most climates.

Propagation and after-care

Sow the seed in early spring, and later on thin the seedlings to a foot (30 cm) apart. It is a good thing to sow seed each year for a continual supply of fresh young leaves. If you want leaves specifically for drying rather than just fresh, you can propagate burnet plants by division.

Harvesting

Pick the young leaves frequently, use them fresh or dry them carefully.

Caper*Perennial*

The flower buds of this herb are pickled in vinegar a few hours after being picked, and then become what we know as capers. These are used to much effect in rice dishes, salads, stuffings, and sauces for meat and sea food. Caper grows wild in warm climates where it flourishes, but it is a difficult herb to grow in temperate climates (where nasturtium may be considered an acceptable substitute).

Soil

Caper does best on poor dry soils; it needs full sun and grows well on slopes.

Propagation and after-care

In sub-tropical areas grow capers from cuttings or division, planting out the established bush into a well-drained mixture of gravel and sand. When you plant the bush, sprinkle enough water to wet it, and thereafter hardly water it at all. You can grow caper successfully in rock gardens, if you simply drop the seeds with a little sand into crevices between rocks. In temperate climates try growing caper under glass, in a well-drained sandy loam, planting out the cuttings in early spring. It also makes an attractive pot plant on a sunny window-sill, but in these circumstances it is unlikely to produce enough buds for culinary use.

Harvesting

Pick off the flower buds as soon as they are fully developed. Leave them in the dark for a few hours before pickling them.

Caraway*Biennial*

Caraway seeds have long been used in cakes, breads, cheeses, candies and sauces. Ground seeds can also be added to rich meats such as roast pork or to spicy stews like goulash. You can use the leaves of the plant in salads, and the roots can be cooked and served as a vegetable.

Soil and climate

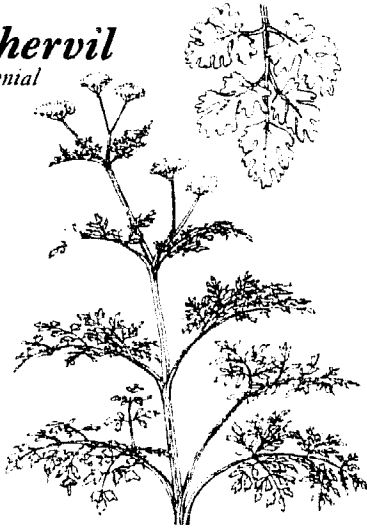
Caraway is adaptable and will accept most soils, as long as they are not too wet, but it prefers a clay loam and a sheltered location. It is winter-hardy and is best suited to a cool climate.

Propagation and after-care

Sow seed as soon as it ripens on an existing plant; alternatively sow bought seed in late spring. Thin seedlings to a foot (30 cm) apart and keep them weed-free. Then leave them until the following year, when they will flower and seed. Caraway plants need protecting from wind, so that the seed heads don't shatter before the seed is ripe.

Harvesting

When the seed turns brown snip off the flowerheads, and dry the seed in an airy place (see p. 216) before threshing.

Chervil*Biennial*

Chervil is a most important herb, a top priority if you are choosing to grow only a few. It is a substitute for parsley but its leaves have a far finer flavor; it is the basis of French cookery with *fines herbes*, the fundamental ingredient of a magnificent soup; it is a fine constituent of salads, one of the very best flavorings in the world for omelets, and it takes its place proudly in many a noble sauce. The habit of boiling chervil is an unfortunate one; it must be added to cooked dishes at the last moment so that its delicate flavor can emerge unimpaired.

Soil

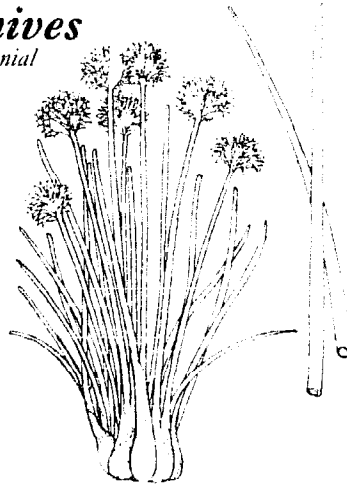
Chervil will grow in any soil except heavy clay or wet ground. It needs some shade in summer but full daylight in winter, so ideally grow it in the partial shade of a deciduous tree.

Propagation and after-care

You should sow some seed in the spring for summer use, and then some more in high summer for cutting in winter. Many chervil-lovers sow successively all through the summer. Chervil does not take to being transplanted, so sow it where you mean it to stay, in drills ten inches (25 cm) apart, thinning later to about eight inches (20 cm) between plants. From then on it will self-sow quite rapidly. I often cloche a summer sowing; alternatively chervil grows well indoors in containers.

Harvesting

You can eat chervil from six to eight weeks after sowing. Cut the leaves off with scissors before the plant flowers. Chervil is tricky to dry, because it needs a constant low temperature, but luckily you can get it fresh all year.

Chives*Perennial*

Chives are mini-onions and like onions are members of the *Liliaceae*, but you eat the leaves of chives and not the bulbs. They are perennial, easy to grow, and you can go on snipping the grass-like tops and flavoring all sorts of food with them.

Soil

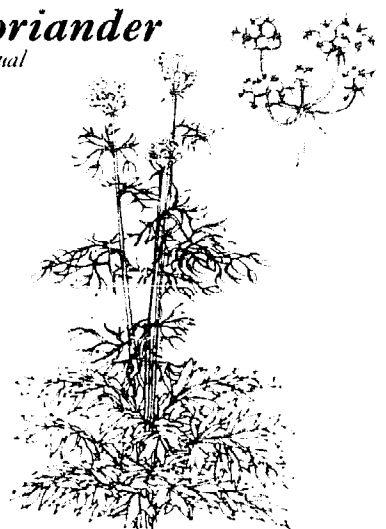
Chives will grow in most conditions, but they will do best on good soil with plenty of humus and they prefer a warm, shady position. They will grow well in containers indoors. They like a pH of 6 or 7.

Propagation and after-care

You can sow seed in the spring but you will get quicker, and better results if you plant seedlings or mature plants. You can buy clumps or get them from a neighbor. Simply divide the clumps up and plant them. The spring or summer is the best time for this. You must keep them moist so it is best to plant them near a pond or water tank, or even a faucet. The plants die down in the winter but you can keep some going for winter use by planting them in a container indoors and putting it on the kitchen window-sill. Every three years or so dig up your chives and replant in fresh soil.

Harvesting

Chives are ready for cutting about five weeks after the seeds were sown. Just clip the "grass" off as you need it to within two inches (5 cm) of the ground. You can clip the tips of the leaves as much as you like without damaging the plants because like all the *Liliaceae*, chives are monocotyledons (see p.18). Thus clipping the tips off has no effect whatever on the growing point down below. The more you cut them the better they will be.

Coriander*Annual*

Don't be put off by coriander's unpleasant smell, because the seed is a most important cooking ingredient. It is essential to Asian cooking; you can use the seeds crushed or whole in curries and mixtures for stuffing vegetables like zucchini, tomatoes and peppers. If you coat coriander seeds with sugar you can add them to your homemade marmalade, or your children can eat them as sweets.

Soil

Rich soil suits coriander best. It also needs a sunny, well-drained site.

Propagation and after-care

Sow the seed in late spring in drills 12 inches (30 cm) apart; later thin to six inches (15 cm). The plants will very probably reach a height of two feet (60 cm) or more.

Harvesting

When the seeds begin to turn brown, cut the plants near the ground and hang them up to dry. Thresh the seeds when they are thoroughly dried and store them in jars. Never use partially dried coriander seeds; they have a very bitter taste.

Dill

Annual



Dill seeds are mildly soporific and are much stronger than the herb derived from the leaves. They are traditionally put in with dill pickles. The slightly bitter taste of the seeds is absent from the leaves, which bring out the taste of fish or chicken.

Soil

Dill accepts almost any soil as long as it is well-drained. It must have sun but should not be allowed to dry out.

Propagation and after-care

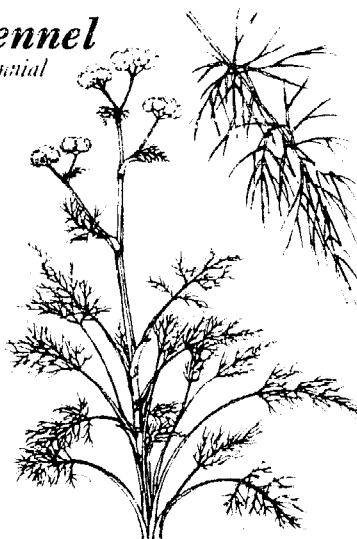
Sow seeds in the bed in the spring, pressing them slightly into the earth. Sow successionally all through spring and summer for a continuous supply of dill leaves. Thin the plants to nine inches (23 cm) in rows a foot (30 cm) apart. As long as you keep them well watered, the plants will grow fast, producing great numbers of leaves before flowering. Very dry weather and inadequate watering will cause them to flower before the leaves are fully grown. Fennel is a bad neighbor for dill as cross-pollination can take place.

Harvesting

You can start cutting the leaves when the plant is about eight inches (20 cm) tall and keep on cutting right through to late autumn. The best time to cut for drying is just before the plant flowers. If you want to use the seeds for pickling cut them when both flowers and seeds are on the head. Seeds you want to use for flavoring or for sowing the following spring should be left on the plant rather longer, until they go brown. Dry the seed heads before threshing them. The drying temperature must not rise above blood heat.

Fennel

Perennial



Fennel looks very like dill, but has a quite different, stronger flavor. The leaves are much used for flavoring oily fish such as mackerel or herring, and should make part of the stuffing for "a pike with a pudding in its belly". You can use them raw in salads as well. The seeds are nice to chew and can be added to liqueurs.

Soil

Fennel grows well in any garden soil provided it is not acid, too heavy or too wet. It prefers a rich chalk soil and a sunny location.

Propagation and after-care

Sow the seed in the fall for a crop the following year. Sow three seeds in a station and leave 18 inches (45 cm) between stations. If you want seeds and not leaves sow in early spring under glass. Another approach is to treat fennel as a biennial by digging up roots in the fall and storing them through the winter indoors in sand. The following spring divide the roots (see p. 95) and plant 12 inches (30 cm) apart in rows 15 inches (38 cm) apart.

Harvesting

Cut leaves through the summer; harvest the seeds when they are still green and dry them out of the sun in thin layers, moving them as they sweat. Drying fennel leaves can be done if you use great care and a low temperature; it is best to use them fresh.

Garlic

Perennial



Garlic can be added to almost any dish. It can be eaten cooked or raw, and it can even be chewed by itself. So grow plenty and use it with abandon.

Soil and climate

Garlic is native to southern Europe, but it will grow in cooler temperate regions. It needs the same sort of good rich soil as onions need with plenty of manure or compost incorporated. Plant it where it will get plenty of sun.

Propagation and after-care

Buy garlic bulbs, from the supermarket if they are cheaper there than at the seed merchant. Pick off the individual cloves and plant them. You can plant them in the autumn, or in the early spring. The sharp end is the top end of the clove – plant each one in a hole deep enough to leave the top just covered with soil. Plant four inches (10 cm) apart in rows as close together as you can manage, or four inches (10 cm) in all directions in a deep bed (see p. 106). Keep the cloves weeded. They don't want too much water.

Harvesting

Fork the garlic out of the ground when the stems dry up and dry them out for a few days in the sun if possible, or under cover in some place where the rain won't reach them. Drying is essential if you want to store garlic. Tie the heads into bunches and hang them up in an airy, cool, dry place; use them as you need them, but keep some to plant the next year.

Horseradish

Perennial



The roots of horseradish make a hot tasting herb. Either grate the roots and use them as they are, moistened a little with vinegar, or make a sauce by mixing them with oil and vinegar or grated apples and cream. Horseradish goes well with roast beef, cold meats and smoked fish.

Soil and climate

Horseradish likes a deep rich soil and will grow in any climate that is not too hot. In hot climates it must be grown in shade.

Propagation and after-care

Just plant three inch (8 cm) pieces of root, about as thick as your finger. Contrary to normal practice I prefer to put them in nearly horizontal and only two inches (5 cm) below the surface. You can plant horseradish any time of the year and once you have got it you have got it for ever. The problem is how to stop it spreading across the garden. You can confine it inside slates or tiles dug deeply and vertically into the soil. Another method is to set a twelve inch (30 cm) land drain pipe into the soil on its end, fill it with loam and compost and plant a piece of root in it. The plant will grow very well, produce clean, tender roots, and be very easy to harvest. And it won't spread. If you don't confine the roots you must dig it out of the ground where it is not wanted.

Harvesting

All parts of the root are edible. Just dig them up and grate them. In cold climates you can store the roots like carrots, in a container of moist sand.

Hyssop

Perennial



Hyssop is a member of the *Labiatae* family and has a pungent and rather bitter taste. The leaves and the ends of the stalks contain the flavor and will go with a variety of dishes. Hyssop is a good plant for encouraging bees into the garden, where they do a lot of good by pollinating vegetables, especially beans.

Soil and climate

Hyssop prefers chalky soil, well-drained and containing plenty of lime. It thrives in warm weather, but will manage to withstand winter in cool temperate climates.

Propagation and after-care

You can sow seed in drills a quarter inch (0.5 cm) deep and transplant the seedlings in midsummer to the open bed when they are about six inches (15 cm) high. Plant them in rows two feet (60 cm) apart.

Harvesting

Once the plants are mature, about 18 inches (45 cm) high, cut back the tops frequently so that the leaves are always young and tender. Cut leaves and stalks for drying shortly before the plants flower.

Lovage

Perennial



All parts of lovage except for the roots can be used in cooking. The bottoms of the stems can be blanched and eaten like celery. The leaves have a strong yeasty celery-like flavor as well, which means they can be used to flavor soups and casseroles when celery is not available. The seeds taste the same as the rest of the plant but the flavor is more concentrated.

Soil

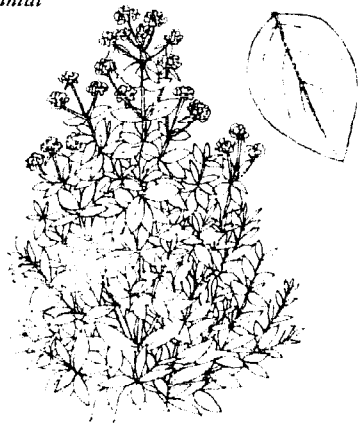
Lovage is a hardy herb and likes a rich, damp soil and a shady site.

Propagation and after-care

Plant seeds in midsummer, in drills an inch (2.5 cm) deep. Transplant the seedlings in autumn or spring to positions two feet (60 cm) apart. By the time the seedlings are four years old they will have reached their full size and should be spaced about four feet (1.2 m) apart. Lovage grows immensely tall; one large plant will be enough to keep a family adequately supplied through the year.

Harvesting

If you want the very large, aromatic leaves for flavoring, water the plants especially well. If they have enough water you will be able to take plentiful cuttings at least three times a year. If you want only leaves, don't allow plants to flower and seed. Lovage can be dried successfully in a cool oven, at a temperature of less than 200°F (94°C), with the door left a little ajar.

Marjoram (Pot)*Perennial*

Pot marjoram is the only type of marjoram that is truly winter-hardy in cool temperate climates. It is a plant which tends to sprawl, throwing out long flowering stems.

Soil

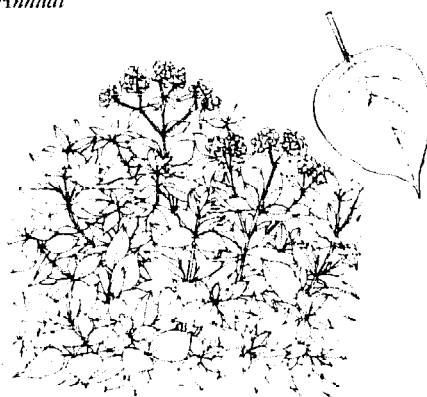
Pot marjoram prefers a dry, light soil, with a modicum of sun.

Propagation and after-care

You can grow it from cuttings established under glass and planted out in the spring, or by putting in bits of root in spring or autumn. Keep it moist until it is well established. The alternative is to sow seed in spring, in drills half an inch (1 cm) deep and eight inches (20 cm) apart. Thin to 12 inches (30 cm) apart when the seedlings are big enough to handle.

Harvesting

Harvest leaves and stems in late summer. Pot marjoram dies down in winter, but it is a good idea to pot it and bring it indoors each winter. If you do this the plant will grow through the winter and may well last years longer than it would if you left it outside. Seeds for sowing next year ripen in late summer or early autumn.

Marjoram (Sweet)*Annual*

Sweet marjoram is the only annual of the three marjorams; it has a delicate aromatic flavor, and goes well with game and poultry stuffings.

Soil

Sweet marjoram needs a medium rich soil, with a neutral pH; it wants a good helping of compost and a warm, sheltered spot.

Propagation and after-care

Sow seeds in pots under glass in early spring. Plant out in early summer 12 inches (30 cm) apart. A combination of warmth and humidity is vital to the good growth of the seedlings while they are still young.

Harvesting

Pick leaves and stems toward the end of summer, before the buds open. Use them fresh or dry in thin layers in the dark (see p. 216) and you will get a strong-smelling green herb.

Mint*Perennial*

As well as common mint (also known as spearmint), you can grow apple mint, which combines in one plant the flavors of apple and mint; orange mint, whose leaves have a delicate orange flavor; or peppermint, used to best advantage in peppermint tea. All these mints are slightly and subtly different, but you grow them all in the same way.

Soil

Mint likes a moist soil - next to a stream is ideal. It needs sunlight to make it grow with full flavor, although it will stand partial shade.

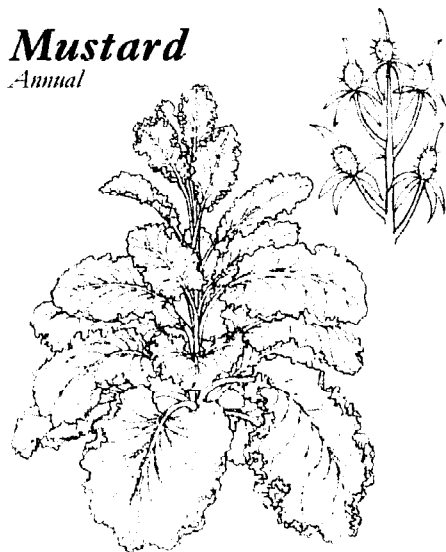
Propagation and after-care

The best way of establishing mint is to get some roots from somebody who is being overrun by it. In the spring lay them horizontally in shallow drills three inches (8 cm) deep. Don't harvest much mint that first summer. In the autumn cut the plant right down and cover the roots with compost. If you are overrun by it, simply hoe it out.

If you want to force some mint for using in winter, dig up some roots in the autumn, plant them in a seed box in good compost, and keep them indoors or in a greenhouse under slight heat, say 60°F (16°C). Mint grows well in containers indoors.

Harvesting

Cut fresh leaves whenever you want them. If you want mint for drying, harvest it in midsummer just before it flowers, but don't cut it after a shower of rain; wet leaves will just turn black and go moldy. Peppermint leaves for tea should be dried and stored whole.

Mustard*Annual*

Mustard is grown extensively by gardeners for digging in as a green manure crop, just before it flowers. It grows quickly, makes a bulky crop, and deters the potato-loving eel worm. Mustard can be grown in the herb garden for seed, however, and it is this that makes the mustard that goes in mustard pots. The seeds are ground very finely and the resulting powder kept dry until it is needed, for mixing with water or vinegar. Seeds can be used whole for pickling or for adding to casseroles. Young mustard shoots cut two or three weeks after sowing form the mustard ingredient of the traditional salading, mustard and cress.

Soil

The seed needs good rich soil, with a pH no less than 6.

Propagation and after-care

The culture of mustard for seed is very easy. Sow in early spring. Broadcasting very thinly will do, but it is better to sow thinly in rows two feet (60 cm) apart and thin to nine inches (23 cm) when the seedlings are established.

Harvesting

Pull the plants out of the ground before the pods are fully ripened, when they are a yellow brown color. Hang them up in bunches to dry, and thresh the seeds out when the pods are well dried. Grind with a pestle and mortar.

Nasturtium*Annual*

Nasturtium is a great asset in the organic garden, because it seems to keep pests away from other plants, especially peas, beans and soft fruit. People who love pepper but who find it upsets them should turn joyously to nasturtium for it is an excellent substitute. The leaves spice up salads and add taste to a bland cream cheese spread. You can use the flowers and seeds in salads, and you can pickle the seeds while they are still young and green to use them like capers.

Soil

Nasturtium is an easy-going plant and will grow anywhere, given plenty of sun and a light, sandy soil. Poor soil is best if you want a good crop of flowers; but if leaves are your priority, add plenty of compost to the soil.

Propagation and after-care

Sow the seeds *in situ* in late spring. Water them sparingly. The seedlings need little attention. Nasturtium will adjust quite admirably to being grown in containers.

Harvesting

Cut the leaves in midsummer, just before the plants flower. Chop and dry them, before shredding and storing. The flowers do not dry well and are best eaten fresh.

Oregano*Perennial*

Oregano, or wild marjoram, is a favorite ingredient in Italian cooking. Known as the "pizza herb" its strong spicy flavor suits strong-tasting, oily dishes; if you use it in more delicate dishes you should use it in moderation.

Soil

Oregano prefers a chalky or gravelly soil, and a warm, dry location. Hill-sides are ideal.

Propagation and after-care

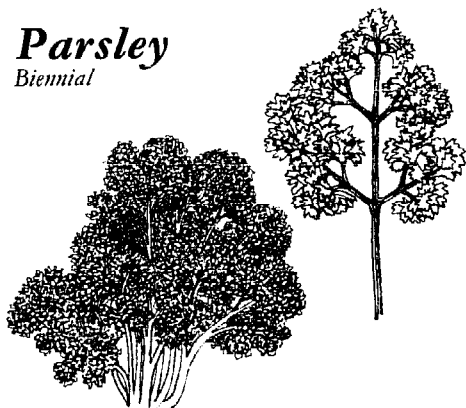
Sow seed in early spring, thinning later to between eight and twelve inches (20-30 cm). The final distance between mature plants should be 20 inches (50 cm). Hoe the seedlings well. Like pot marjoram, you can grow oregano from cuttings. It is slow to grow, and needs a hot spell to bring it on really strongly.

Harvesting

Pick leaves and stems in late summer. Seeds for sowing ripen in early autumn. Use fresh or else dry in thin layers in the dark.

Parsley

Biennial



Parsley will enhance almost any dish you care to mention, from the blandest poultry to the spiciest sausage. Its great virtue is that it never overpowers the natural taste of food, just brings it out more fully. Broad-leaved, or French parsley, which is grown in the same way, is more substantial and can be used as an ingredient in salads.

Soil

Many people think that parsley is difficult to grow, but I find that as long as it is given rich enough soil, with plenty of humus, this is not the case. The earth needs to be well worked so that the roots can penetrate deeply. Parsley thrives in containers, but again the soil must be rich and well drained.

Propagation and after-care

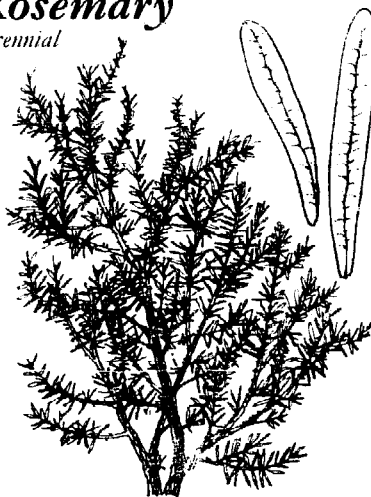
You can grow parsley from seed, but the seed is extremely slow to germinate. (A good tip to speed germination is to put the seed between two layers of wet blotting paper in your refrigerator for about two weeks.) Sow seed in spring, and exercise patience. Put the seeds in drills half an inch (1 cm) deep; later thin to three inches (8 cm) and eventually, when the plants are mature, to eight inches (20 cm). You can sow in late summer, for winter forcing. In the winter put a cloche or two over some of your parsley patch. Parsley usually runs to seed in the second year, so you should sow it fresh every year to ensure succession.

Harvesting

Pick a few leaves at a time from each plant. If you want bunches, you can pick off whole plants close to the soil, once the stem is eight inches (20 cm) high. For drying you should pick leaves during the summer and dry them quickly. Parsley is the only herb to need a very high drying temperature — between 100 and 200°F (39-93°C). Dry it in an oven with the door open.

Rosemary

Perennial



This woody shrub originates from the dry chalky hills of southern France. It is very ornamental and can grow to more than five feet (1.5 m) so it is useful grown in rows to divide vegetable beds. It goes best with rich meats, such as lamb, mutton or pork. Its piney flavor is pleasant but pervasive, so exercise some restraint.

Soil

A light, sandy, rather dry soil suits rosemary best. It needs plenty of lime, shelter and a southerly aspect.

Propagation and after-care

Sow seeds six inches (15 cm) apart in shallow drills in spring. When the seedlings are a few inches high, transplant them to a holding-bed, leaving six inches (15 cm) between plants. When they are well established, plant out three feet (90 cm) apart. Seeds do not always germinate, so taking cuttings — before or after flowering — is more efficient. Cuttings should be six inches (15 cm) long. Remove the lower leaves and bury two thirds of their length in sandy soil in a shady position. By autumn they will be ready for planting out. Protect them during their first winter by cutting them back to half their length in late summer; this enables the new shoots to harden off before the onset of cold weather. Then mulch with leaf-mold and cover securely with burlap.

Harvesting

Pick sprigs in small quantities from the second year onward. You can do this at any time of the year, but late summer is best for drying. You can use rosemary flowers for flavoring as well as stalks and leaves. Pick the flowers just before they reach full bloom.

Sage

Perennial



Sage is strong-tasting stuff — too strong to mingle well with other herbs, but it goes well with spicy sausages, fresh garden peas or as a flavoring for cream cheese. For cooking use narrow-leaved sage, for drying, broad-leaved. A mature bush is about two feet (60 cm) high and is both a useful and an attractive plant to grow in a small garden.

Soil

Sage likes well-drained chalky soil, so lime well if the ground is at all acid. It does not like damp ground or too much water.

Propagation and after-care

Narrow-leaved sage can be grown from seed sown in late spring. Transplant seedlings 15 to 20 inches (38-50 cm) apart in early summer.

Broad-leaved sage is always grown from cuttings. Take cuttings with a heel of stem on them, plant out in spring and water well at first. Sage will last for several years but it is just as well to establish a new bush from time to time.

Harvesting

If you want leaves rich in oils it is best to wait until the second year. Cut narrow-leaved sage in early autumn. Broad-leaved sage will not flower in temperate climates; it should be cut in midsummer and again a month later to stop it going woody. The leaves are tough and take longer to dry than most herbs.

Savory (Summer)

Annual



Summer savory is an annual and tender in cold climates. It can be used fresh or dried. In spite of its strong aromatic smell it has a more delicate flavor than winter savory. You don't need to grow large quantities, as it grows fast and you only need a little at a time.

Soil and climate

Summer savory will accept poor chalky soil, but thrives on a rich humid soil as long as it has not been freshly manured or composted. It will grow in all but the coldest climates.

Propagation and after-care

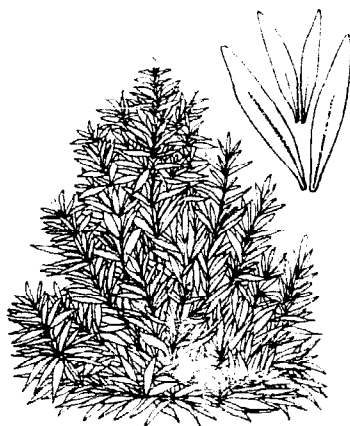
Sow in late spring in rows a foot (30 cm) apart, and thin seedlings to six inches (15 cm). It is said that the seed should lie just on top of the soil to germinate, but I find it germinates quite well just below the surface where it is less likely to be eaten by birds. Work the soil well before sowing and keep it damp afterward. Summer savory will often seed itself and shoot up again in the fall.

Harvesting

You should be able to cut summer savory twice from the one sowing; once in summer and again in the autumn. Cut shoots just before the flowers open. Harvest the seeds for sowing next year when they go brown. To dry summer savory lay it on frames (see p. 216), cover with a fine-meshed net and put it in a dark cupboard with a low temperature.

Savory (Winter)

Perennial



Winter savory is more hardy than summer savory. It grows a foot (30 cm) high and is bushy, making it an ideal plant for filling the low gaps in garden hedges. Winter savory's strong flavor makes it a good accompaniment for baked fish or lamb.

Soil

Winter savory grows well on poor soil and likes well-drained chalky land. It needs plenty of sun.

Propagation and after-care

Sow seed 12 to 15 inches apart in drills in late spring. Don't cover the seeds because they need light to germinate. You can also propagate by planting out cuttings two feet (60 cm) apart in the spring.

Harvesting

You can cut shoots in the second year from early summer onward. As with most herbs, harvest before flowering so that you get the maximum content of volatile oil; this also stops the stalks going woody. Winter savory leaves become very hard when dried, so you should grow the herb indoors during the winter and pick it fresh.

Sorrel

Perennial



Sorrel has a refreshingly acid taste. It is a close relative of the dock and looks rather like it. It can go raw into salad, and is very good cooked with spinach, omelets, veal or fish. Sorrel and lettuce soup can be quite exquisite.

Soil

Sorrel likes a light, rich soil in a sheltered place, with plenty of sun, but it will grow very adequately in the shade.

Propagation and after-care

You can sow seed in spring and thin the seedlings out later to six inches (15 cm) apart. Alternatively you can propagate by dividing roots (see p. 95) in the spring or fall. When the plant flowers in early summer, cut it back before it goes to seed.

Harvesting

You can start harvesting four months after thinning, or whenever a plant has formed five strong leaves. Cut the leaves with a knife or pull them straight off the plants; cook with them in an enameled pot because an iron one will turn them black. You can dry leaves in the dark and store them in airtight jars.

Tarragon

Perennial



Tarragon is traditional with chicken, good with fish, and excellent in soups; and tarragon vinegar is an excellent salad dressing. There are in fact two varieties which are often confused: Russian tarragon and French tarragon. Russian tarragon is the tougher and the taller of the two plants; French tarragon is stronger flavored and needs to be checked in its summer growth to stop it becoming too bushy in the winter.

Soil

Tarragon does not like "wet feet" so good drainage is vital. Try to plant it on a slope so that the roots never get waterlogged. Tarragon likes being exposed to the elements, and puts up with fairly poor soil; it does not even mind stony ground.

Propagation and after-care

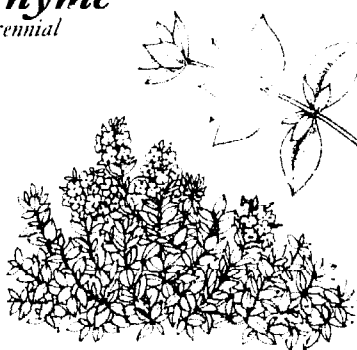
It is best to buy young plants or divide mature ones, planting them out to two feet (60 cm) apart, after the last hard frost. Every four years transplant cuttings so that you have plants with a full flavor. Do this in spring or autumn. You can grow tarragon in pots which you bring indoors in the winter, or cut the outdoor plants right down every autumn and cover them well with compost or other litter.

Harvesting

Pick fresh leaves all through the growing period; this will encourage new ones to grow. If you want to dry them, cut the plants down to just above the ground before they flower. You may manage to cut three times during the growing season of an established plant. Dry in the dark at a fairly low temperature.

Thyme

Perennial



This hardy perennial is native to southern Europe. Common thyme has a sharp bitter-sweet taste. Shoots, leaves and flowers can all be used — fresh or dried — in soups, stews and meat dishes of all kinds. Less hardy than common thyme, lemon thyme has a beautiful scent and taste. The leaves are delicious, chopped fine and sprinkled sparingly, on salads or meat. Otherwise lemon thyme is mainly used for flavoring. It is a good plant to grow if you have bees; it gives honey a delicious fragrance, but bees will collect the nectar only in hot weather.

Soil

Thyme likes a light, well-drained soil which has been well limed. It does best in a sunny position, and is excellent in rock gardens.

Propagation and after-care

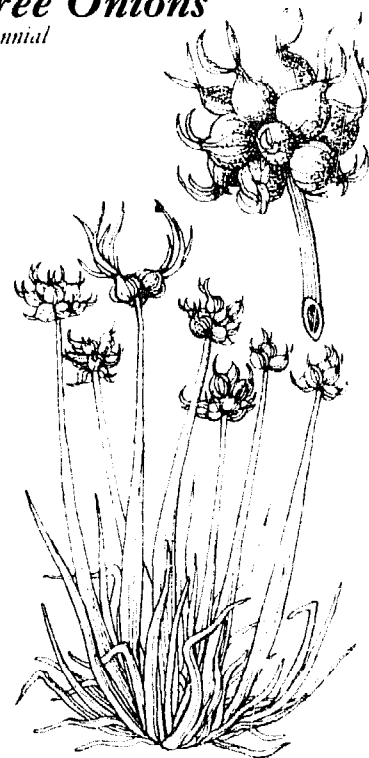
If you grow thyme from seed, sow it in late spring in drills a quarter inch (0.5 cm) deep and two feet (60 cm) apart. It is more usual to propagate by division from an established plant, or by cuttings taken in early summer. Keep the beds well watered and weed-free. Cut back a little before the winter and in subsequent springs cut the shrubs well back to encourage new growth. Lemon thyme trails and in exposed positions should be protected during the winter with straw or leaf-mold.

Harvesting

Cut once in the first year, but from the second year onward you can cut twice. Cut early if you want to, but flowers can be used with leaves, so you can cut during the flowering period. Cut off shoots about six inches (15 cm) long, rather than stems from the base of the plant.

Tree Onions

Perennial



Tree onions are delightfully pungent, and can be used for pickling as well as in stews, or chopped up raw in salads. Also known as Egyptian onions, they differ from other onions in that the onions grow at the top of the stems. The parent bulb stays in the ground to produce another crop the next year, although if you want you can eat the underground bulbs as well as the ones that form on the flower stems.

Soil

Tree onions like a sunny and well-drained spot. They should be started off with a heavy mulch either of compost or well-rotted manure.

Propagation and after-care

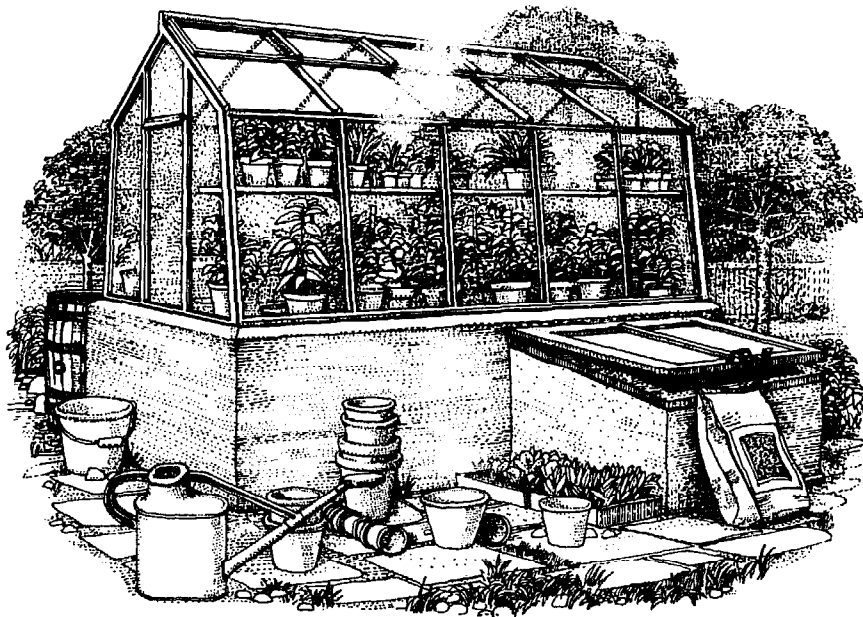
Plant bulbs in the spring. Plant them in clumps, six inches (15 cm) apart in rows 18 inches (45 cm) apart. Mulch from time to time with compost. The stems may grow as tall as five feet (1.5 m), so when the little onions begin to form, use sticks to support the weight of the plants.

Harvesting

Pick the bulblets from the top of the plants as and when you need them.

CHAPTER EIGHT

Growing in the Greenhouse



*Containing advice on the choosing and
equipping of a greenhouse, and instructions
on the sowing, growing and
harvesting of greenhouse crops.*

Growing in the Greenhouse

The primary function of a greenhouse is for propagating seeds and growing a few winter vegetables. It is therefore well worth having some form of greenhouse in all but the smallest garden. For very small gardens, seeds can be propagated on a convenient window sill.

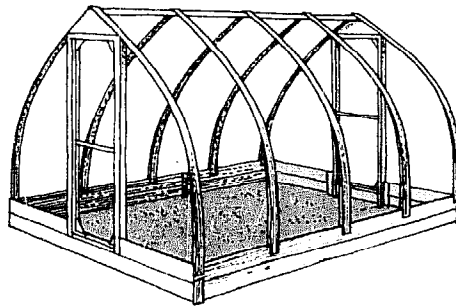
Now, there is a huge variety of greenhouses and you should think very hard about what best suits your needs and your pocket. I suggest you should start by getting hold of as many suppliers' catalogues as possible, and by having a look at the greenhouses of as many of your neighbors as you can and asking their opinions.

TYPES OF GREENHOUSE

Starting with the smallest form of greenhouse, I suggest that you consider the window-greenhouse. You can buy one of these and fix it over a convenient south-facing window. Alternatively, consider taking a window out of its frame, building a wooden platform out from the house at the base of the window, and erecting a glass casing above it so as to form a protrusion from the house. This greatly increases the size of the platform that the original window sill provides, and also pushes the seed boxes or pots right out into the light where the seedlings and plants do better. And you have the advantage that, if the room behind is heated, the window-greenhouse is heated too. A small window-greenhouse will grow enough tomatoes to keep the average family well supplied.

A lean-to greenhouse is a very common and sensible arrangement. It is best if there is a door leading from the house straight into the greenhouse, and it is even better if there is also a window connecting the two. Either door or window can be left open, in winter for warmth to get from the house to the greenhouse, and in the summer for the delicious aroma of plants to enter the house.

One advantage of a lean-to greenhouse is that you save half the cost of a free-standing greenhouse. Disadvantages are that it is often difficult to effect the join between walls and roof of the greenhouse, and the wall of the house itself. Also you often end up with too shallow a pitch in the roof of the lean-to, which can cause leaves, rubbish and water to collect. The best things about a lean-to are that it acts as a sun-trap, is nice to work or sit in, and helps considerably to warm the house in winter. You do not get as much light from the sky as you do with a free-standing greenhouse, but the increased warmth from proximity to the house more than compensates for this. A

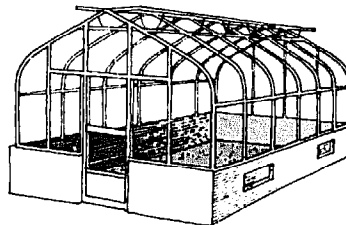
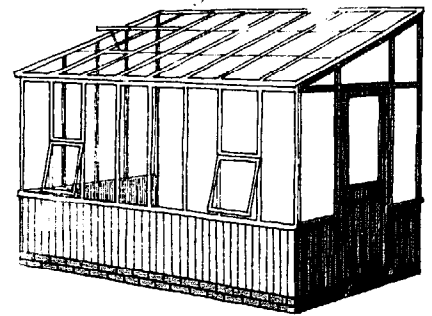


PLASTIC GREENHOUSE

You can build this kind of greenhouse yourself, using plywood and plastic sheeting. Flexible sheeting is cheaper than rigid plastic and easier to cut up, but it must be renewed every three years or so.

LEAN-TO GREENHOUSE

A lean-to greenhouse attached to a south-facing house wall is ideal in a small garden. A door or window connecting house and greenhouse allows heat to pass both ways.

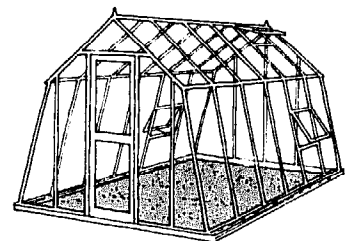


CURVED-EAVES GREENHOUSE

Greenhouses with curved eaves are very popular, because the transparent fiber glass walls are erected in fewer pieces than conventional greenhouses.

DUTCH STYLE GREENHOUSE

The sloping sides enable the greenhouse to attract more light, and the whole construction is very stable. You cannot grow very tall plants close to the walls.



free-standing greenhouse can be a very ambitious affair, as large as you have space and money for. It gets more light than a lean-to, but has much worse heat insulation. If I built one I would build an insulated wall of stone or brick to the north side and paint that black to absorb sunlight during the day, and I would build it with a steeply sloping roof.

Lean-to and free-standing greenhouses can be built in all shapes and sizes and can be made from many materials. You can buy a greenhouse ready-made from a specialist firm, you can build one yourself, or you can build a basic structure yourself and buy components — panes of glass in wooden or aluminum frames — and fit them in to it. Nowadays, it is probably cheaper as well as quicker, to buy your greenhouse ready-made. The most common shapes are described above.

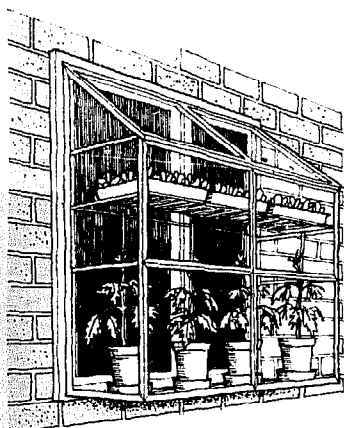
Basic materials for greenhouses

As far as the framework of your greenhouse is concerned your choice is really between wood and

Growing in the Greenhouse

FREE-STANDING GREENHOUSE

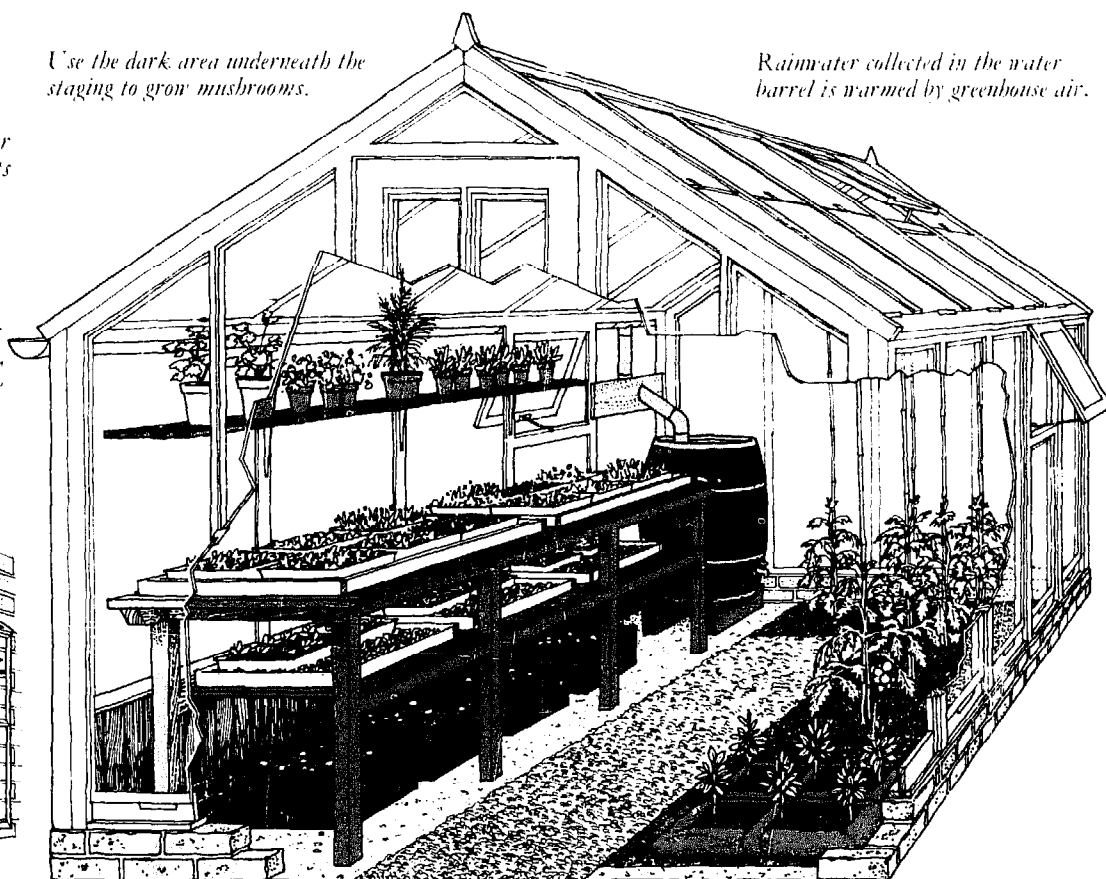
Most free-standing greenhouses are all glass. They allow a maximum light, and are ideal for growing fruit trees or large plants directly in soil, on the greenhouse floor. An alternative is to have low brick or wooden walls; this cuts down heat loss drastically, but means that you must have raised staging. Many greenhouses have a low wall on the north side, and glass all the way down on the south side.



WINDOW-GREENHOUSE

These are designed to replace ordinary house windows. They are extremely efficient, because they get heat from the sun and from the house.

Use the dark area underneath the staging to grow mushrooms.



Rainwater collected in the water barrel is warmed by greenhouse air.

STAGING

If you want to grow plants in pots or seed boxes you will need staging. This is best made of wooden slats supported on frames made of or seasoned wood.

CREATING HUMIDITY

In hot weather spray the gravel path occasionally with water, to create humidity. For the same reason, rest your seed boxes on large trays full of moist gravel.

GROWING IN SOIL

Tomato and pepper plants are very suitable for growing directly in greenhouse soil, or in peat bags.

aluminum, although a third choice – plastic piping – is currently being developed and may prove cheaper than the others.

Aluminum will not rust or rot, but it is generally agreed that it reacts more strongly to hot and cold than wood and therefore cools the greenhouse in winter; my own belief is that this is not a significant factor. Aluminum looks ugly, is hard to work yourself and is fairly expensive. If you decide on aluminum you have really got to buy your greenhouse ready-built.

Wooden greenhouses must be made from a decay-resistant wood like cedar, redwood, or cypress. It is pointless using soft wood or any wood that requires constant painting to stop it from rotting. Wood has a tiny disadvantage in that it obscures more light than aluminum, but it looks nicer and you can work it yourself. And a cedar greenhouse should last as long as you will.

The choice of transparent sheeting for greenhouses lies between glass, and three kinds of plastic: fiber reinforced, which is a transparent form of fiber

glass; PVC or acrylic modified plastic, which is a fairly stiff plastic; and polyethylene which is flimsy.

Glass lets in a lot of light, looks good, lasts a very long time, is seldom broken by wind and can easily be mended, but it costs a lot and requires a strong framework to carry its weight.

Fiber reinforced plastic comes in large sheets; it is easy to fit and does not need extensive framing. It also takes some of the heat out of a hot sun, which is a very good thing. However, it does not admit as much light as glass and this is a serious disadvantage in winter. It is also inflammable, and will only last twenty years.

PVC and acrylic modified plastic are cheaper and transmit light well, but they will last only five years and can be ripped by a gale.

Polyethylene is very cheap – about a tenth the cost of glass – and transmits light very efficiently. But it will only last one or two years, and is very easily ripped by gales.

Transparent plastics are becoming very popular all over the country, and as long as plastics remain

cheap, relative to glass, they are well worth using. Glass is, of course, better in the long term, but it represents a substantial capital investment nowadays.

Heated or unheated?

The other great decision to make about your greenhouse is whether to heat it or not. My own feeling is that for the person genuinely gardening for self-sufficiency a heated greenhouse is a luxury that defeats its own object. It is very easy to put more calories of energy into a heated greenhouse than you get out as food produced. A heated greenhouse is fine for the specialist who wants to grow flowers out of season, or the commercial grower who wishes to supply a luxury winter market, but for the person who is genuinely trying to be self supporting at low expense, it is not really worthwhile unless he can provide himself with cheap energy such as water or wind power, or has a good source of wood for burning.

There are useful crops that can be grown in an unheated greenhouse all the year round anyway, and there are excellent ways of storing summer crops so they don't have to be forced in the winter. In the summer time, even in quite a cold climate, you can use an unheated greenhouse to grow, or start growing, most of the crops that grow their whole lives outdoors in warmer more humid climates – tomatoes, cucumbers, melons, peppers, eggplants and so on. And in winter your unheated greenhouse will enable you to grow lettuces, radishes, spinach and a few other cold climate crops. Surely it is better to eat canned tomatoes and eggplants in the winter than to try forcing such things unnaturally and at great expense. A little heat occasionally, when the temperature is very low in the winter, just to prevent the cold climate crops you are growing at the time from dying, is quite justifiable, but this is a very different matter from running a heated greenhouse all through the year.

Interior fittings

Inside your greenhouse you will need some staging. You can, of course, grow plants in the soil on the floor of the greenhouse and not have staging at all; for the big plants like tomatoes and cucumbers, and for all fruit trees, this is the best way. But, for your seed boxes, and for the other vegetables which you will grow in pots, you need staging. Using benches in tiers is undoubtedly the best way to get the greatest possible number of crops into your greenhouse.

Your benches should be between two and a half and three feet (75-90 cm) wide: not wider than three feet because that makes them awkward to work on. In a greenhouse ten feet (3 m) wide two rows of benches – one on each side – are enough; against the north wall have a three-tiered bench, on the south a single tier so that it does not obstruct too much light. If the greenhouse is much wider than ten feet (3 m), you can consider having another bench down the middle; this should be a double tier. If your greenhouse is as narrow as seven feet (2 m), have just one bench of three tiers against the north wall. If you take it that your path or paths should be 20 inches (50 cm) wide, you can easily work out the best arrangement for a given width of greenhouse.

To support your benches consider using old galvanized water or gas pipes. These are strong, easily cleaned, and very permanent. Plate glass is best for the actual benches, if you can afford it. It is easily cleaned, lets light down below, and does not allow water to drip. If you use wooden slats for the benches you should place glass, plastic or slate underneath the lowest tier to stop water dripping on the plants below.

If you use wood for anything in a greenhouse be careful about using creosote. The fumes can kill plants. Old creosote is probably safe.

Paths should be gravel, crushed rock, or concrete. I prefer the two former. If you sprinkle gravel or crushed rock with water and rake it occasionally, it creates a cool moist atmosphere in hot weather.

If you have dark spaces under your benches you can grow mushrooms there. They provide a great deal of good protein in a very little space and don't mind the dark.

Greenhouse soil

Ideally, the soil of a permanent greenhouse should be "artificial". That is, it should not be the original soil of the site but a soil made up and brought in from outside. A good mixture is as follows: one part sphagnum-moss peat; one part coarse sharp sand; two parts good garden topsoil. If you mix a bucketful of vermiculite or perlite to a wheelbarrow of this mixture so much the better. Vermiculite and perlite are fragmented rock products that keep the soil open and loose; they have no nutrient value in themselves.

Many growers pasteurize all their soil before bringing it into the greenhouse and then pasteurize it every year. If you grow the same crop year after year in the same soil you have to do this

in order to avoid a build-up of disease. I prefer to dig out the soil my tomatoes have grown in, put it outside and bring in fresh soil.

Soil for seed boxes

You really should pasteurize — and I mean pasteurize, rather than sterilize, because sterilization kills all life in the soil and this is not the organic gardener's aim — all soil for seed boxes, unless you buy professionally-made seed compost which is in fact a very sensible thing to do; you use so little that the expense is minimal. A three cubic foot (0.08 cu m) bag will fill 18 seed boxes, 20 by 14 inches (50 x 35 cm) to a depth of one and a half inches (4 cm).

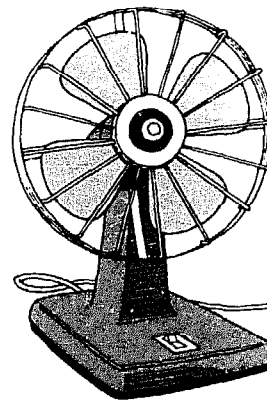
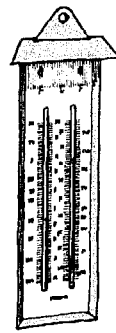
If you do want to pasteurize your own soil, put it in an oven pan, cover with tinfoil, and bring it to 180°F (83°C) — no more than that or you will kill useful bacteria as well as harmful ones. Alternatively, you can drench the soil in boiling water and then let it drain quickly, or you can cook the soil in a pressure cooker for twenty minutes at five pounds (2.3 kg) pressure.

Before filling seed boxes soak the seed compost in water: one gallon (3.8 l) of water to five pounds (2.7 kg) of compost. Leave it for a day before putting it in the boxes or pots. If you are short of seed compost, put two inches (5 cm) of sand and peat mixed in the bottom of each container and then add just half an inch (1.5 cm) of seed compost on top.

It is best to cover your benches with something which will absorb water — cinders are ideal — before you put seed boxes or pots on them. This keeps the plants from drying out and cinders discourage slugs and snails.

Greenhouse temperature

Even in a heated greenhouse the temperature should vary between night and day. In a general greenhouse, with many different things in it, 65°F (19°C) by day and about 45°F (7°C) at night is ideal. If the temperature outdoors does not go much below 25°F (−5°C) you may be able to maintain these temperatures without any artificial heat, especially if you have a lean-to or a free-standing greenhouse with a black-painted north wall. If you can keep the air stirring in the greenhouse, with an electric fan for example, this will help a lot. Heat rises, so the hot air tends to go up into the ridge, and its heat is lost. Stirring the air forces the heat down again and in this way the temperature remains even. It would be worth experimenting with a very small windmill fitted

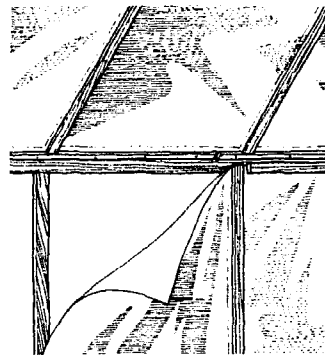


THERMOMETER & FAN

A maximum-minimum thermometer is helpful in a greenhouse, and a fan is very useful for keeping hot air away from the roof.

with a direct drive to a fan in the greenhouse.

A good way to keep heat in is to double-glaze. This can be done temporarily for the winter, by attaching plastic sheeting to the inside of the greenhouse. You can also keep the temperature up in winter by keeping the wind off your greenhouse. A screen of evergreens planted on the side

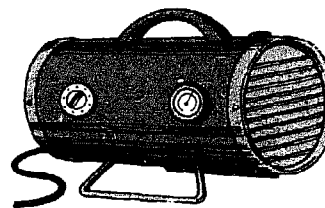


DOUBLE-GLAZING

The surest means of keeping your greenhouse temperature up in winter is to double-glaze. It is cheap as long as you use plastic sheeting and attach it with pins to the inside of the greenhouse. You will want to remove it when the weather warms up anyway.

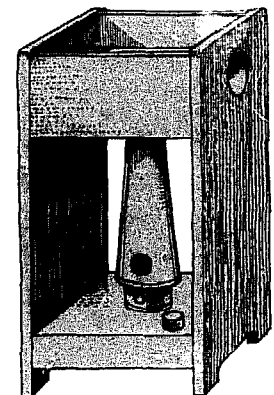
which faces the prevailing wind can be very effective protection for a free-standing greenhouse.

If you need some artificial heat in winter an electric heater with a thermostat is ideal, but it is expensive to run. The alternative is a special greenhouse kerosene heater. These give off fewer fumes than household kerosene heaters, and fumes are bad for plants. The disadvantage of these is



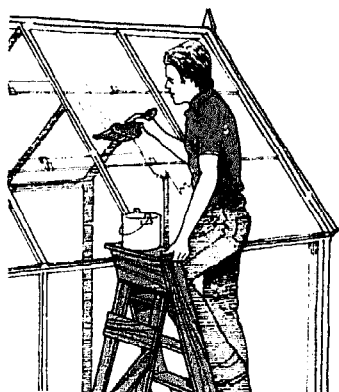
ELECTRIC & KEROSENE HEATERS

Electric heaters can be controlled thermostatically, but they are expensive to run. Kerosene is cheap, but the burner must be adjusted regularly.



that you must constantly check the temperature in your greenhouse and turn the heater on and off, because the greenhouse must not get too hot.

Keeping cool in summer may be as hard as keeping warm in winter. Plain honest whitewash on the glass panes is a very useful device. It

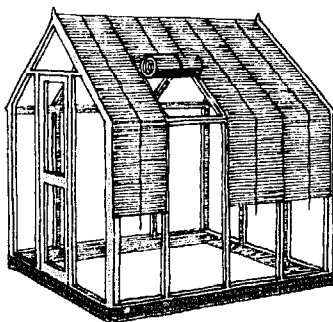


WHITEWASHING GLASS

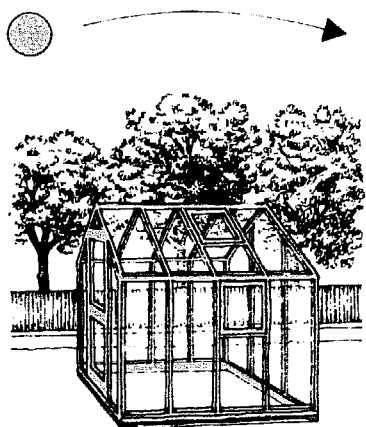
Whitewash painted on to a glass greenhouse keeps out the sun's hottest rays in summer. You can whitewash the whole greenhouse, or just the side which receives most sun; how much whitewashing you do will depend on what you are growing and the climate in your part of the world.

GREENHOUSE BLINDS

Bamboo blinds are a convenient and attractive means of keeping greenhouses cool. Roll them down whenever the temperature threatens to get too high.



washes off naturally when the fall rains come on and you don't need it any more. (Don't use whitewash on plastic. You may have to wash it off artificially, and this may scratch the surface.) Screens of bamboo or other sticks, or screens of plastic can be used either inside or outside the greenhouse, but they are expensive and don't last long. A good idea, especially in sunny climates, is to plant a screen of deciduous trees between the greenhouse and the sun. The leaves shade the house in the summer and die away in winter when you don't want shade.



TREES FOR SHADING

Deciduous trees planted on the sunny side of your greenhouse will keep it cool in summer. The leaves will fall in autumn, when the greenhouse needs sun again. Don't plant the trees too close to the greenhouse, because their roots will take nourishment from the greenhouse soil.

Ventilation

Ventilation is very important. Never let the air become "dead" as greenhouse growers call it, meaning stagnant; you must keep it "buoyant". This is difficult, given that you have to maintain a temperature as well, but constant attention to opening and shutting ventilators achieves a lot. Thermostats are fairly cheap and can be fitted to ridge ventilators.

WATERING GREENHOUSE PLANTS

Watering plants in the greenhouse is difficult and requires great judgment. To water too much is counter-productive; at worst it kills plants. But to leave plants until they droop from drought is obviously disastrous as well. Watering little-and-often is bad policy. Plants need a good soaking every now and then, and dry periods in between.

You can check whether a plant needs watering by sticking a skewer into the soil. If it comes out clean and dry, the plant needs watering. If particles of earth cling to the skewer, the plant is all right as it is. Tapping the sides of a clay flowerpot is another indication. If it rings hollow, water. If it doesn't don't.

Don't, as a rule, water foliage in your greenhouse. Put the water on the soil only. Water in the morning — never in the evening; plants don't want to go to bed sodden and cold. Don't use freezing cold water; if you can manage it, 70°F (21°C) is best for most greenhouse plants. It is an excellent idea to have a water barrel in a greenhouse; the water then reaches the temperature of the air.

GREENHOUSE CROPS

If I had a criticism of the divine plan it would be that tomatoes flourish in very different temperature and humidity conditions from cucumbers, and these two crops are far and away the most valuable things that a gardener can grow under glass. There are three things you can do: set yourself up with two greenhouses; divide your greenhouse up with a partition; use your greenhouse to grow cucumbers, eggplants, melons and other vegetables which like humidity, and grow tomatoes under mini-greenhouses (see p. 111) out of doors. (You have no problem, of course, if you are blessed with a climate in which it is possible to grow tomatoes reliably without any protection at all.)

If you divide your greenhouse up, I would suggest that you partition off a small area of the greenhouse where you will grow a few very early tomatoes in the winter and cucumbers in the summer. The main part of your greenhouse will then

be for that most important of all crops, tomatoes, in the summer. In winter it will be devoted to lettuces. The information about growing individual crops, which follows, is intended to supplement the information provided in the Cultivation of Vegetables and the Cultivation of Fruit sections (pp. 113-190).

Tomatoes

Soil treatment Prepare the greenhouse soil by forking in at least half a wheelbarrow load of well-rotted compost per square yard. Some wood ashes, fish manure, or other high potash fertilizer are worth adding if you have them.

Propagation Sow seed in the last week of January. Sow it in the greenhouse if you have some heat, otherwise sow it indoors. Plant seeds carefully in a seed box in a good proprietary seed compost. It pays to buy this from a reputable merchant as you need such a tiny amount and the subsequent crop is so important to your family economy. However, you can make your own (see p. 92). If you have no propagator (see p. 92), keep the seed box at about 70°F (21°C) by day and 65°F (19°C) by night, by covering the tray with glass and putting newspaper over the glass. It is important to wipe the underside of the glass every day to prevent water dripping on to the seedlings below.



PLANTING TOMATO SEEDLINGS

Tap the pot gently all round. Scissor the plant between your fingers and upend the pot into your hand. Pull the pot away leaving the root ball intact. Plant gently and water straightaway.

After eight or ten days – as soon as the little seed leaves are fully out – prick out into three inch (8 cm) peat or clay pots. After about three weeks when the plants in the pots are well grown, plant them out in the bed, leaving 15 inches (40 cm) between plants. Give each plant a stick or string to climb up. In the case of peat pots, just plant the pots; with flowerpots tap the plants gently out of the pots, keeping the ball of soil as intact as you can and plant carefully. Water the plant at once.

You can, of course, grow the tomatoes in pots, or other containers, without even planting them in a bed. In this case, you should use good growing compost in ten inch (25 cm) pots.

Care while growing Keep the temperature in the greenhouse between 65 and 73°F (19-23°C) by day and don't let it drop below 50°F (10°C) at night. In some states you should be able to achieve this without any artificial heat. For early winter-sown tomatoes, you may need some form of heating. Keep the greenhouse well ventilated; tomatoes don't want a stale and humid atmosphere. Water very well – on the soil not the plant – whenever the leaves begin to wilt, but don't water too much. A good soak about once a week is perfectly adequate.

Pinch out side-shoots. When the fruit begins to ripen remove some leaves to let the sun get in if this seems necessary, but don't keep hacking the leaves out for they are what make the plants grow. Don't overfeed tomatoes. Once every two or three weeks, it's a good idea to give them a bucket of compost or manure soup, or comfrey tea (see p. 103).

A very good method of growing tomatoes in greenhouses is in peat bags (see p. 138). These are plastic bags which you fill with peat or specially prepared compost. Apart from the fact that you get far more from them than you pay out for the bags, the peat or compost ultimately adds to the fertility of your garden. Ring culture (see p. 138) also works well in a greenhouse.

Harvesting Pick tomatoes as they come ripe. You should be picking from midsummer until well into the beginning of the fall. In early fall pick the remaining green tomatoes and put them in a drawer to ripen.

Cucumbers

Soil treatment The bed of the greenhouse should be dug well and plenty of compost or manure – strawy manure is best – should be incorporated. For each plant make a mound of compost mixed with loam and sand. Mounds should be about six inches (15 cm) deep and a foot (30 cm) wide. Allow two feet (60 cm) between mounds.

Propagation Sow the seed from midwinter onward in small peat pots or flowerpots – one seed to each pot. Use a proprietary seed compost or its equivalent (see p. 92). Stand the pots where the temperature will never go below 70°F (21°C). If your greenhouse is unheated, keep them in your house. If they are in flowerpots, it is a good thing after two weeks to pot them on into bigger, say six inch (15 cm) pots, using a good growing compost. Don't jam the compost around them too hard, soak well after repotting, but thereafter water only when the soil inside is dry.

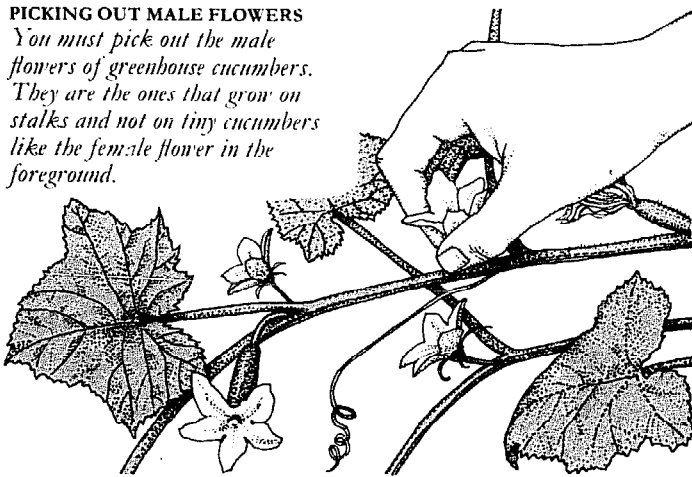
When the plants are six inches (15 cm) high, plant them carefully in the middle of the prepared mounds in the greenhouse. The temperature when you do this must be at least 70°F (21°C).

Arrangements must be made for the vines to climb, so give each plant a vertical wire or push in a substantial cane. Take these up the sides of the greenhouse to the roof, and put in horizontal wires at 18 inch (45 cm) intervals. Now the temperature must never fall below 70°F (21°C) and it is best if it rises to about 90°F (32°C) in the day. When the plants are young they need hardly any ventilation. If you do open the ventilators a little during the morning, close them early in the afternoon. This is why cucumbers don't co-exist happily with tomatoes which need much drier air.

Care while growing By about midsummer you may have to whitewash the glass above the cucumbers so that they don't receive much direct sun. At this time of year you need high humidity but you must not keep the roots constantly wet. A good watering twice a week is enough. But syringe the plants with warmish water once a day, and keep the floor and walls of the greenhouse moist.

PICKING OUT MALE FLOWERS

You must pick out the male flowers of greenhouse cucumbers. They are the ones that grow on stalks and not on tiny cucumbers like the female flower in the foreground.



As the plants grow you must train them. Tie the vines loosely to the wires or canes. Stop the main stem by pinching out the growing point when it gets to the roof or when it is six feet (1.8 m) high. Nip out all male flowers (the ones that grow on little stems and not on the mini-cucumbers) so that they will not pollinate the fruiting females and produce bitter fruit with large pips. Nip out any female flower that grows on the main stem. Stop all laterals (branches from the main stem) at two joints and each sub-lateral (branches from a lateral) at one joint.

A good dose of compost, manure, or comfrey tea from time to time will be all to the good.

Harvesting Cut your cucumbers when they reach an appropriate size, and eat them as soon as you possibly can. Never leave them to grow old and shrivelled on the vine.

Melons

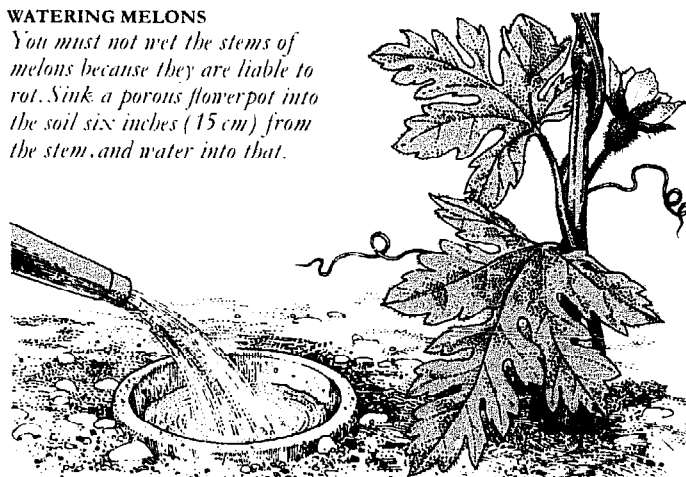
Soil treatment Melons will grow very happily in any greenhouse, or part of a greenhouse, where cucumbers are growing. They need the same temperature and humidity conditions as greenhouse cucumbers, and the soil should be treated in the same way. It is well worth preparing mounds for melons, as you would for greenhouse cucumbers.

Propagation Propagate melons as you would cucumbers, by sowing one seed to a flowerpot or peat pot in midwinter, and make sure that the temperature does not drop below 70°F (21°C). Plant the seedlings out when they are six inches (15 cm) high. You will need to give them vertical and horizontal wires or canes to climb up.

Care while growing Protect your melons from direct sun in the middle of the summer. Water them fully about twice a week, but don't water round the stem of the plant at soil level, because

WATERING MELONS

You must not wet the stems of melons because they are liable to rot. Sink a porous flowerpot into the soil six inches (15 cm) from the stem, and water into that.



this is likely to cause collar rot – a disease which rots the base of the stem. Instead, sink a flowerpot into the ground six inches (15 cm) away from the plant and water into that, taking care not to splash the stem of the plant. Give the whole plant a light syringing with water once a day.

As your melons climb, attach the plants loosely to the wires or canes. Large melons may need to be supported in nets or cloths. Fix these to the sides of the greenhouse or to your supports.

Harvesting Melons are ripe when the skin around their stems begins to crack and they come away easily from the vine. Pick them when they are ripe and eat them as soon as you can.

Eggplants

Soil treatment Eggplants like rich soil, so dig in plenty of compost.

Propagation Eggplants are best grown in summer, unless you have a heated greenhouse. Sow seeds in peat pots, because eggplants do not like being transplanted. The seeds need plenty of heat: 75 to 85°F (24 to 30°C). If the temperature falls below 70°F (21°C), they very likely won't germinate. Keep them, therefore, in the part of the greenhouse where you grow your cucumbers. When the seedlings are four inches (10 cm) high, transplant them into their permanent bed.

Care while growing Keep your eggplants well watered, preferably with manure water (see p. 103).

Harvesting Cut eggplants as soon as the skins are shiny and deep purple. The plants will then produce more.

Peppers

Soil treatment Dig well and incorporate compost.

Propagation If you have an unheated greenhouse, you must grow peppers in the summer if you live in a cool climate. In a warm climate they will thrive in an unheated greenhouse even in winter.

It is best to start the seed off in a propagator or in a seed box with a pane of glass over it. The temperature should be about 80°F (27°C). When the seedlings are two inches (5 cm) high, transplant them into peat pots. When the plants are four inches (10 cm) high plant the pots in their permanent positions. This should be in the part of the greenhouse set aside for cucumbers, because peppers need plenty of warmth and moisture.

Care while growing Keep well watered; be sure to water the roots and not the peppers. Water on the peppers will cause them to rot.

Harvesting When they reach the right size, cut them from the vine leaving a stalk an inch (2.5 cm) long on each pepper.

Okra

Soil treatment Dig deeply and work in plenty of compost. Manure is not good for okra; it causes the plant to put its energy into making leaves rather than fruit.

Propagation Unless you have a heated greenhouse, sow your okra seed in early summer. Okra seed is stubborn, so soak it in water for twenty-four hours to get it started, and then sow it in peat pots in a propagator (see p. 97). If you don't use a propagator, still use peat pots, because okra seedlings prefer not to be transplanted. Plant out when the plants are two inches (5 cm) tall.

Care while growing Like cucumbers, okra plants thrive on heat and moisture; hot dry air is bad for them and can cause the buds to drop off. Give them a good watering twice a week, and syringe them with water daily.

Harvesting Pick the pods when they are young – about two inches (5 cm) long. The plants will then go on bearing.

Lettuces

Soil treatment Rake a good measure of compost into your soil or, if you grow lettuces in containers, make sure the soil contains peat or compost.

Propagation Sow the seed in a seed box in late summer if you want lettuces for eating in winter. Keep the seed box moist, at about 60°F (16°C), and covered with glass and newspaper. Remove the newspaper when the seedlings first appear. When they are half an inch (2 cm) high prick them out, using extra seed boxes, to give them more room. Remove the glass and keep them at about 55°F (13°C).

Water occasionally, but take care not to over-water. When the lettuces are three inches (8 cm) high plant them out into the greenhouse bed or into suitable containers. This final planting out should occur in mid-autumn when you will still be eating your outdoor lettuces.

If you want early spring lettuces sow some seed in mid-autumn for planting out in midwinter. You may well find yourself planting next year's tomato crop among these spring lettuces. This does not matter: you will clear away the lettuce long before the tomatoes need the room.

Care while growing Keep the lettuces watered, but do not wet the plants – only the soil. If you let the soil dry right out the poor lettuces will flop on the ground and will very likely suffer from gray mold (see p. 157). The ideal temperature for the winter lettuce house is 65°F (19°C) by day and 55°F (13°C) by night. They are, after all, a cool climate plant, and will survive out of doors all winter in a temperate climate if they are protected with cloches.

Harvesting Pick lettuces young or old, when you want them, but remember that, if they are left too long, they will bolt.

Radishes

Radishes are easy to grow in an unheated greenhouse. Simply broadcast the seed in the greenhouse soil and rake it in, or sow it in seed boxes. They can be harvested within a month and present no problem at all.

Peaches

Soil treatment Before planting, incorporate plenty of humus into the soil, but avoid an excess of nitrogenous material because this encourages unnecessary growth. Keep the soil moist but not sodden — spraying it on sunny days will maintain humidity. When the fruits are ripening, apply liquid manure.

Propagation Plant the tree in potting compost in a ten gallon (38l) tub; keep it in the greenhouse until all danger of frost is past and then put it out for the summer, in a sunny but very sheltered place. Alternatively, if you have a fairly large greenhouse, you can grow a fan-trained peach tree: train it along wires parallel to the wall and eight inches (20 cm) away from it.

Care while growing Hand-pollinate the flowers on the tree with a small brush. Later, when the fruits are about half their final size, thin them so that there are nine inches (25 cm) between fruits. You must prune fan-trained trees by cutting back old fruiting shoots after the fruit has been harvested to a point where a new shoot is emerging. You then train the new shoot along the wire. In early summer prune off unwanted wood.

Harvesting Pick the peaches as and when they are ripe; this is when they turn yellow and give very slightly under pressure.

Oranges, lemons and mandarins

Soil treatment Citrus trees need well-drained soil which should be a mixture of sand, compost, loam and peat — ideally in roughly equal proportions.

Propagation It is best to buy orange or lemon saplings from a nursery rather than try to grow your own from seed. Mandarins are especially good indoors, because they are small. Plant the trees just as you would outdoors (see p. 98) directly in greenhouse soil.

Care while growing Keep indoor citrus pruned small. Hose the foliage down on hot days. If you grow them in tubs put them outdoors in the summer, but don't ever leave them out in a frost. In winter allow the temperature of the house to go down to 45°F (7°C).

One important point: you will have to fertilize the flowers of indoor citrus trees. You can easily see which are the male organs, the stamens, because they have pollen on them. Take some off with a small paint brush and put it on the female stigma which sticks out beyond the petals.

Harvesting Ripe fruit can be left on the tree for weeks, even months. Just pick it when you want it and don't worry about storing it.

Figs

Soil treatment It is best to grow figs in tubs which can be moved outside in summer. Fill the tubs with earth which contains plenty of compost, and mix in a little lime. Be sure the tubs have drainage holes.

Propagation *Ficus carica* is the ideal variety for growing indoors in a tub, and the best thing is to buy a young one from a nursery. But, of course, like all figs, they can be propagated from cuttings (see p. 185). Plant them in their tubs as you would any other tree (see p. 98).

Care while growing Water enough to keep the soil damp, but not saturated, and spray the leaves from time to time. Move the tubs outside at the beginning of summer, and bring them in when the leaves have fallen or when the first mild frost comes in the fall, whichever occurs first.

Harvesting Eat figs fresh as soon as they are ripe. Otherwise dry them (see p. 216).

Grapes

Soil treatment The soil for grape vines must be well drained. Dig it deeply and apply rock phosphate and potash. Add lime if the pH is below 7.

Propagation Buy year old vines from a nursery or propagate from cuttings as you would if you were growing vines outdoors (see p. 188). Greenhouse vines can be planted inside or outside the greenhouse. If your greenhouse is heated it is best to plant the vines in the soil on the floor of the greenhouse. However, if you want to train vines inside an unheated greenhouse, it is a good idea to plant them in a well-prepared bed just outside the greenhouse, and train them through openings in the greenhouse wall. If you have more than one vine, plant them 10 feet (3 m) apart — indoors or outdoors.

Care while growing Vines should be trained up the south-facing wall of a greenhouse. Let each vine fan out to form six strong vertical branches, and tie these permanently in place against the wall.

Now, pretend these verticals are the ground and do your Guyot method pruning (see p. 190) using pairs of strong laterals that spring from them. In this way you will be able to cover your wall with fruiting spurs.

Harvesting Cut bunches with shears when the stems of the bunches begin to turn brown.

Strawberries

Strawberries are very easy to grow in the greenhouse. Treat them exactly as you would outside. You can plant them in good rich compost either on the ground, on a bench, or in pots.

CHAPTER NINE

Preserving Garden Produce



*Containing instructions on the salting,
drying, pickling, bottling and freezing of
crops, and on the making of jams,
jellies, chutneys, wines and cider.*

Preserving Garden Produce

Your aim as a self-sufficient gardener is to provide yourself and your family with a rich, varied, and high quality diet throughout the year. This means that you must store a lot of your produce, and much of it will not store for long unless it is processed, or "preserved", in some way.

Grains, root vegetables and potatoes are easy to store. Green vegetables are more difficult. However, if you live in a warm or temperate climate, or even in a colder than temperate climate you do not need to store them. I eat fresh green vegetables picked straight from the garden all year round. I have no desire to eat frozen peas in the winter or frozen Brussels sprouts in the summer, when, with much less trouble, I can eat them both fresh in their seasons. However, although I prefer to eat as much fresh food as I can, I still have to store and preserve a good deal.

Of course, in very cold climates, where snow covers the ground for months at a time, or where frost penetrates deep into the earth, you cannot go out into the garden and pick fresh vegetables in midwinter. Therefore all your winter food must come from your stores. And, even in warm climates, there is a strong case for storing certain crops. Tomatoes are a good example. There is no fresh equivalent of tomatoes at times of the year when you cannot pick them fresh. Nothing takes their place, and your cookery will be severely restricted if you do not have them in some form.

Food rotting agents

There are four main causes of food going bad:

Enzymes These are natural chemicals within most plants. Over a period of time they can cause changes which will spoil food. They cannot function in freezing conditions and are destroyed by temperatures above 140°F (60°C).

Molds Molds can actually be seen – the white fluff on jellies or jams, the grayish dust on the rind of bacon and so on. Some molds are not harmful, but many are, and in any case all molds – except those of blue cheeses – are best avoided, because they can weaken the food's resistance to more harmful organisms, especially bacteria. Molds won't spread at any temperature below freezing point, or above 120°F (50°C). They begin to die above 140°F (60°C). To be sure of killing them, you must heat food to 185°F (85°C).

Yeasts These function at about the same temperatures as molds. They cause fermentation which turns sugars into alcohol. This has its uses in the making of wine, beer and sauerkraut, but you don't want it to happen all the time.

Bacteria Some bacteria are your worst enemy although others actually assist in preserving processes. Harmful bacteria not only rot food, making it unpalatable, but some of them can even kill you. Bacteria vary as to the temperature that is needed to kill them. Two of the worst – the *Staphylococci* and, the most dangerous of all, *Clostridium botulinum*, which causes the deadly botulism – need 240°F (115°C) to kill them, their spores, and the poisons they leave. 240°F cannot be achieved by boiling water, which will only go to 212°F (100°C). So boiling – except for a very prolonged period, or in a pressure cooker – is not sufficient to rid food of these bacteria.

However, bacteria are not active in acid food. All food that tends toward acidity – a pH of less than 4.5 – is safe for canning without the use of a pressure cooker. These foods comprise all the fruits, including tomatoes, and rhubarb. Other vegetables must be pressure cooked for safety. This is extremely important.

Methods of preserving

There are six main ways of preserving food:

Salting Salt draws some of the moisture out of vegetables, thereby inhibiting the activity of the rotting agents. It also keeps bacteria away, for the simple reason that they do not like salt.

Drying This process removes the moisture which is necessary to the functioning of the various spoilage organisms. Vegetables should be dried so that they contain no more than ten percent water; fruits can contain up to 20 percent.

Pickling and chutneying With these methods you increase the acidity of whatever you are preserving by adding vinegar. Thus you do not need the prolonged boiling, or the superheating in a pressure cooker, or the very careful hermetic sealing, that you need with plain bottling.

Canning This method works because all the living organisms and enzymes in the food are first destroyed by heat. Then the sterilized food is put into clean containers, which are sealed to stop the entry of any new organisms. The containers are then heated again to make quite sure of killing any organisms that might have got in by mistake.

Jam and jelly-making You make use of both heat and sugar to preserve fruits which have a fairly high acid content.

Freezing This works simply because spoilage organisms cannot operate at low temperatures. They are not necessarily killed, but they are prevented from multiplying and are unable to spread their beastly poisons.

shred white cabbage hearts pretty finely, and pack them tightly into a barrel or crock, sprinkling dry salt between the layers of cabbage, at the rate of half an ounce (14 g) of salt to a pound (500 g) of cabbage. Cover the top of the crock with a big cabbage leaf and put a cloth over it. Then cover with a lid, weighted down with a stone. Store the barrel in a warmish place – about 70°F (21°C) is fine. Skim off scum from time to time. After two or three weeks transfer the barrel to the coolest place you have got (but not to a deep freeze), and keep it until you want it. Rinse the sauerkraut under a faucet before eating it. At all stages the salt must cover the sauerkraut. If it doesn't, add more salt. Additions of dill, ground celery seed or ground caraway seed all help the flavor.

Dill pickles

The dill pickle is a great American institution. Pack a large number of cucumbers, along with a few onions, green peppers, cauliflower florets, green tomatoes, carrots and chopped parsnips into a crock with plenty of dill, and cover them with brine as described above. When you come to wash the salt out, the sharp taste of the dill remains.

DRYING

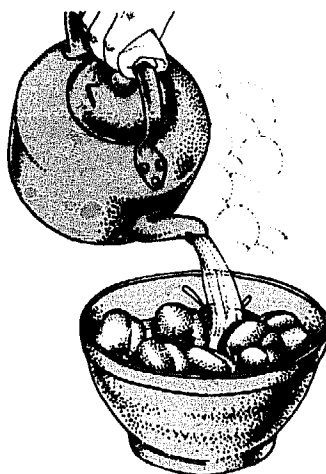
Drying is one of the simplest methods of storing vegetables, fruit and herbs. Nothing is added: instead just water is taken away. You could dry almost all your garden produce, but the process works best with all the herbs, many of the fruit and just a few vegetables. If you live in a warm climate, consider drying as a method of storage very seriously. Your produce will dry much more readily in a warm climate than in a cool one.

Fruit

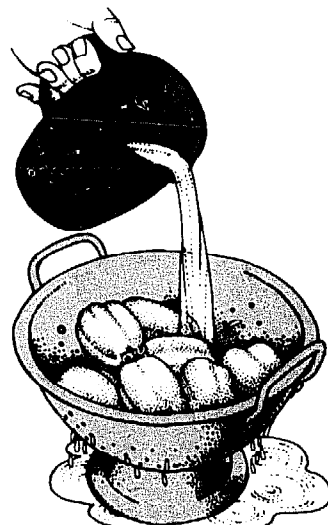
Almost any fruit can be dried successfully, but apples, apricots, peaches, grapes, currants, plums and figs dry most easily. To dry fruit, start by slicing it up. If you are using large fruit like apples, slice them into thin slices; smaller fruit, like peaches and apricots, should be halved; plums and anything smaller are best left intact. Fruit that is being dried whole benefits from being blanched before it is dried. To do this either steam the fruit or plunge it into boiling water for a minute, and then put it into cold water to cool. Dry your fruit using one of the drying devices described below.

To preserve color, commercial driers burn sulfur under fruit. You can achieve this by dissolving two grams of ascorbic acid in two and a half pints (1 l) of water and dipping the fruit into it.

BLANCHING PEPPERS



1 Before drying whole peppers blanch them by soaking them in boiling water for a minute.



2 Cool the peppers by soaking them in cold water. Drain immediately.

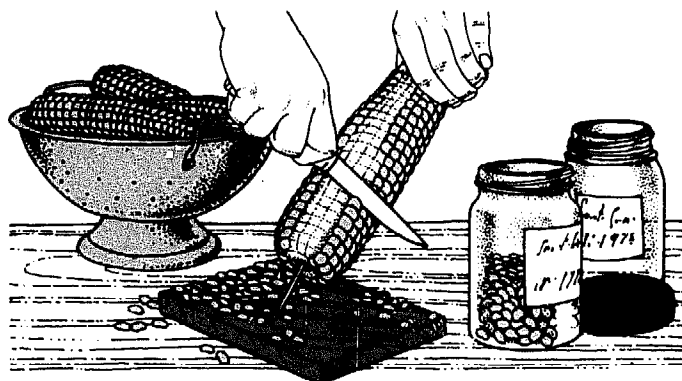
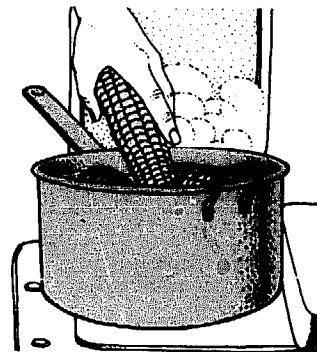
Vegetables and herbs

All herbs, but only some vegetables – peas and beans, peppers, asparagus and sweet corn – are easily dried. If you are going on a long Antarctic voyage, it might be sensible to dry all sorts of other vegetables too, like cabbages and squashes. Blanch and dry vegetables just as you would fruit. Herbs do not need to be blanched; dry them in any of the devices opposite.

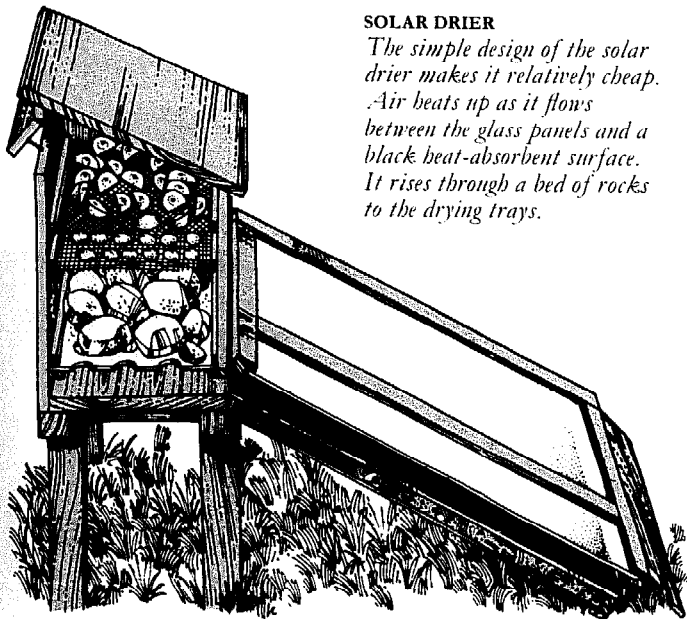
Sweet corn Sweet corn, especially off the cob, is an excellent thing to dry. It stores well in a small

DRYING SWEET CORN

Blanch the cobs in boiling water for ten minutes. Impale the cob on a nail sticking up at an angle from a piece of wood. Slice the kernels off the cob with a sharp knife. Dry in a slow oven and store in jars. To reconstitute the sweet corn, pour boiling water over it; then leave it until it has absorbed as much water as possible.



space and can be reconstituted easily. Begin by blanching the cobs in boiling water for ten minutes. If you just want to dry the kernels, impale the cob on a nail sticking up at an angle from a piece of wood. Then slice the corn off with a knife. Dry the kernels in a slow oven, and put them in jars. If you want to dry corn on the cob, strip off the husk and dry in a slow oven. When the cobs are dry you can either store them as they are, or you can get the corn off the cob by grabbing with both hands and twisting in opposite directions.



SOLAR DRIER

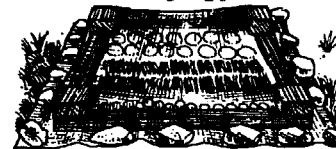
The simple design of the solar drier makes it relatively cheap. Air beats up as it flows between the glass panels and a black heat-absorbent surface. It rises through a bed of rocks to the drying trays.



Wire mesh drying frame



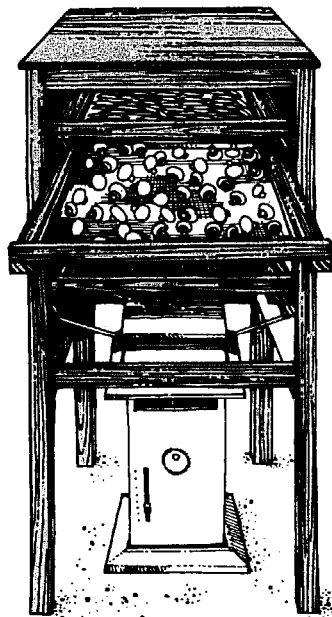
Cheesecloth drying frame



Cheesecloth protection for fruit

DRYING FRAMES

Frames can be made from wood and cheesecloth or wire mesh. Cover wire mesh with brown paper to protect the food.



DRYING CABINET

A series of trays and a kerosene heater make up this cabinet.

Drying devices

Trays Any kind of tray that is perforated to let the air circulate can be used to dry fruit and vegetables. Put them either outdoors or in a warm place indoors.

Cabinets A drying cabinet can be simply a home-made structure which has slots to hold trays. An electric or kerosene heater can be placed underneath, if required. Alternatively, you can buy a drying cabinet, either metal or wood, which has an electric heater built in.

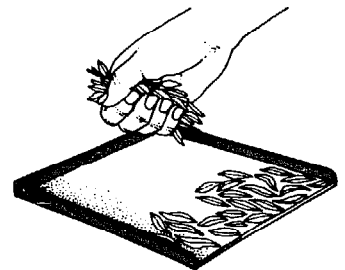
Ovens As long as you take great care, you can use your kitchen oven to dry most vegetables, fruit and herbs. As a rule use a low heat, especially for herbs. You may find it best to leave the oven door open. Use solid metal trays, instead of metal racks, to be sure that nothing catches fire.

Solar driers These are catching on more and more, because they are an easy and effective way of using solar heat. Air is admitted through an adjustable flap and crosses over a blackened surface underneath glass panels heating up as it goes. The hot air rises through a bed of rocks and then through a series of perforated trays, which hold the produce to be dried. The rock bed heats up slowly through the day, and retains some heat throughout the night, which prevents condensation forming on the glass.



DRYING IN BUNCHES

Dry herbs in bunches upside down, so that the volatile oils flow into the leaves.



DRYING ON TRAYS

Alternatively, you can dry herbs on trays in your oven. Shred the leaves before storing them in jars.



Hanging bunches You can dry herbs, apple slices and mushrooms by stringing them and hanging them up. A temperature between 70 and 80°F (21-27°C), and a strong draft are ideal for herbs.

Reconstituting dried food

To reconstitute dried food, pour boiling water over it. Allow the food to absorb as much moisture as it can. Many fruits cannot be reconstituted: currants and raisins are a case in point.

MAKING PICKLES AND CHUTNEYS

Pickles and chutneys are both means of preserving produce and enhancing its flavor at the same time. Both processes involve flavoring fruit and vegetables with spices and then storing them in vinegar. To pickle something you store it in cold, spiced vinegar, whereas to chutney something you cook it in vinegar until its consistency becomes thick and syrupy.

If you buy – rather than make – your vinegar, remember that there is a wide range of strengths and flavors. Distilled, or fortified vinegar is the very strongest; of the natural vinegars wine vinegar is the strongest, and this also has a purer flavor than either cider or malt vinegar. These factors are worth bearing in mind: you will pay according to the quality of your vinegar. You may find it economical to use cider vinegar in chutney – where the liquid is all boiled away – whereas in pickles you may well want to use a purer vinegar, since the flavor of the vinegar is more likely to affect the taste of the pickle.

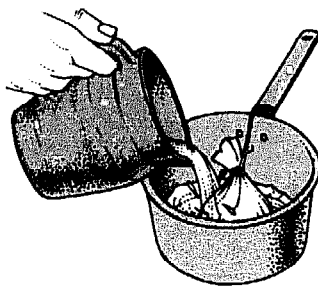
Pickles

I believe in spicing the vinegar I use for pickling. You can add any spices you like, although I recommend that you use whole ones for an attractive end-product; ground spices will turn the vinegar cloudy. The very best way of making spiced vinegar is to steep all the spices in cold vinegar for two months; it will then be ready to use. For a quicker method study the pictures below.

MAKING SPICED VINEGAR



1 Take a stick of cinnamon, some cloves, peppercorns, mustard seed, mace, allspice, garlic and, if you like them, a chili or two.



2 Tie the spices in a muslin bag, and pour two pints of vinegar over them. Bring to the boil, and boil for a few minutes at most.

You can pickle virtually any vegetable or fruit, and you can use them whole or sliced up. Even

okra, eggplants and Jerusalem artichokes make good pickles. The principle of pickling is the same whatever vegetable or fruit: draw out some of the excess water from moist vegetables by soaking them in brine or coating them with dry salt, and then put them in vinegar. Crisp vegetables can be put straight into the vinegar. Cold vinegar is usually perfectly adequate, but boiling your vinegar and sterilizing your jars is safer if you want to keep the pickle for a long time. As for spices and herbs – every person to his own recipe. Let imagination and experimentation reign supreme.

Remember when you store away your jars of pickles, seal them tightly to prevent evaporation. Six months is probably the longest they will keep and still retain all their flavor. Take care that the vinegar is not in contact with the metal lid.

Pickled onions Soak small pickling onions in a brine of salt and water, using four ounces (114 g) of salt for two and a half pints (1 l) of water. Leave them overnight and then skin them. Put them in fresh brine for three days; submerge them using a plate and a stone. Then drain them, pack them in jars and fill the jars with cold spiced vinegar. Add a little sugar for a mellower flavor, and store for two months before eating.

Pickled green tomatoes Slice the tomatoes and mix them with a few sliced onions. Sprinkle thickly with salt, and let the mixture stand overnight. Then rinse it well in water. Put it into hot sterilized jars and pour boiling spiced vinegar over it. You can pickle peppers in exactly the same way.

Pickled gherkins or small cucumbers Use a gallon (3.7 l) of spiced vinegar to one and a half gallons (5.5 l) of cucumbers. The latter should have been salted (see p. 215), removed from the brine and desalted ready for pickling by being soaked in cold water for 12 hours. Boil the vinegar and then add the cucumbers. Boil for two minutes, and then leave them covered for three weeks. If you don't want to eat them immediately drain the vinegar off and pack the cucumbers in sterilized jars. Pour fresh boiling vinegar over them, seal the jars and immerse in boiling water for ten minutes. Treated in this way pickled gherkins should last indefinitely. To make a sweeter pickle mix honey or sugar with the last lot of vinegar.

Chutneys

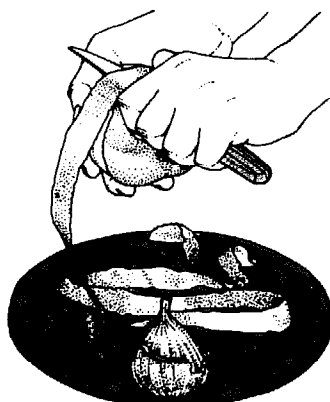
Most fruits and vegetables can be turned into chutney but the best are tomatoes (green or red), eggplants, peppers, apples, squashes, pumpkins, rutabagas, plums, pears, oranges, grapefruit, lemons and any other citrus.

Preserving Garden Produce

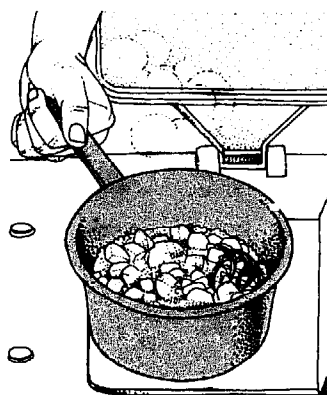
MAKING TOMATO CHUTNEY



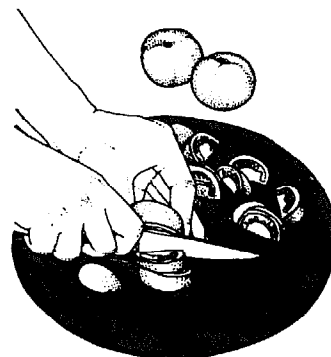
1 Take two pounds (900 g) of tomatoes, two onions, a cooking apple, some raisins, garlic, brown sugar, salt, spice and two ounces (300 ml) of vinegar.



2 Skin and peel the onions, peel and core the apple. Then chop them up finely together.



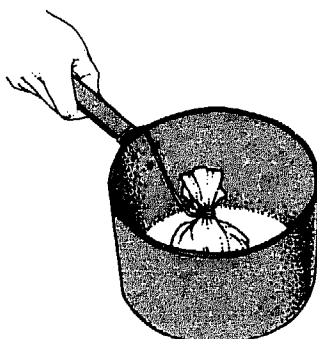
3 Simmer the onion in a small pan with a little water. Add the apple and raisins, and cook gently until they soften.



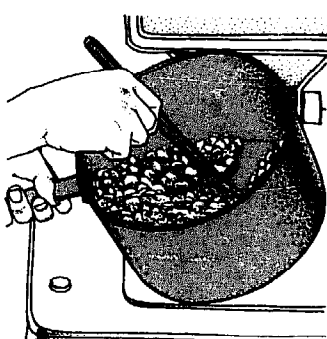
4 Skin the tomatoes (see p. 221), and then chop them up roughly into large chunks.



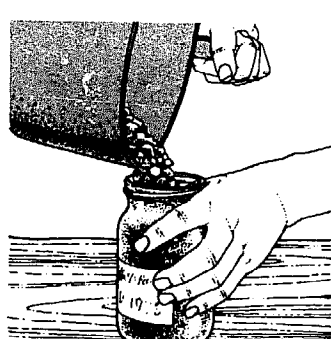
5 Crush the garlic and ginger with some salt in a pestle and mortar. Tie up a mixture of spices – say, some chilies, bay leaves and cloves – in a little muslin bag.



6 Put the muslin bag in a saucepan and tie it to the handle so as not to lose it in the chutney.



7 Pour in all the ingredients and cook on a low heat for an hour, until the mixture thickens so that you can see the bottom of the pan when you draw a spoon through.



8 Pour the mixture into hot clean jars. Seal the jars to make them airtight, label and store them.

All good chutneys are heavily spiced. You can use any herb or spice that you like or can get hold of. The following are commonly used: garlic, bay leaves, cayenne, chili, paprika, cumin, horseradish, coriander, mustard seed, cinnamon, peppercorns, cloves, ginger and allspice. Salt and sugar also play an important part; most chutneys go dark as they cook, but if you want a really dark one use brown sugar or even black molasses.

Never use copper, brass or iron pans for boiling your chutneys. Unchipped enamel, stainless steel, or, at a pinch, aluminum will do. You can make chutneys in earthenware crocks placed in the oven; I personally find this method is the best. If you are mixing hard produce like apples or onions with soft things like tomatoes or squashes, simmer the hard ingredients first in water until they are soft. Soak any dried fruit you use. Put whole herbs and spices into a muslin bag, which I suggest you tie to the handle of the pan; otherwise

powder them first and then put them straight into the mixture. Before adding garlic or fresh ginger crush them with a mortar and pestle.

Put all the ingredients into the container. Just cover them with vinegar, and boil very slowly until there is no free liquid left. Be very careful not to let the chutney burn on the bottom of the pan. Stir frequently during the final stage of boiling. Pack into sterilized jars, cover and put them away. Make sure that the jars are tightly sealed; I recommend using twist-on metal caps from old jam or pickle jars. Then cover the lids with a cloth that has been dipped in melted wax.

CANNING

The principle of canning is very simple. You heat food in sterilized jars, close these hermetically, and then heat them again so as to kill any stray living organism that may have got in. Finally the jars are allowed to cool. Provided that there was no living

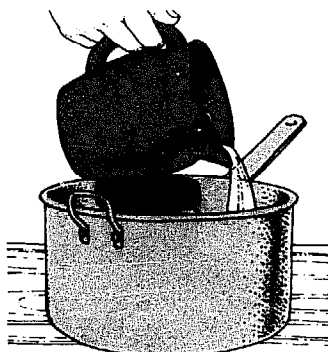
thing inside the jar when it was sealed, and provided that the heating process was sufficient to kill all bacteria, mold and viruses, there is no reason why the food should ever rot. Food canned 75 years ago has been opened and found edible.

Canning most fruit – including plums and some soft fruit – is entirely satisfactory, completely safe and well worth doing. Tomatoes, which are technically a fruit and not a vegetable, are easy to can and the results taste delicious. Tomatoes alone make canning a worthwhile process. However, I have reservations about the canning of vegetables, as opposed to fruit. Heating by boiling is not sufficient to sterilize them, so you need to use a pressure cooker, which affects the taste. And remember that vegetables can be stored easily and safely in many other ways.

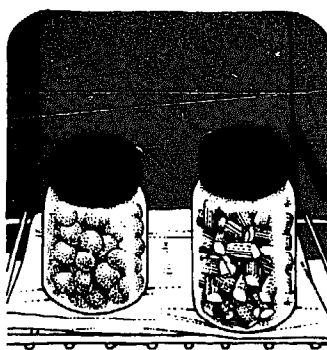
COLD WATER BATH



1 Put the fruit into jars, along with a weak syrup of sugar and water.

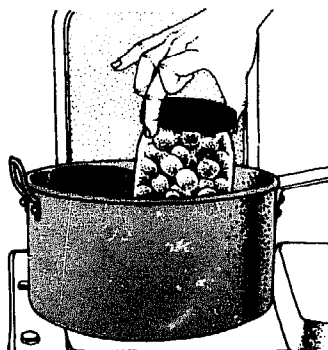


2 Put the jars into a container with water. Place on the stove and heat very slowly (see chart). Use a thermometer to measure the temperature.



SLOW OVEN METHOD

Can the fruit without liquid. Cover with a loose lid and put into a low oven. Fill with boiling syrup after taking them out.



HOT WATER BATH

Pack your jars with fruit and pour in boiling syrup. Put lids on loosely and lower into warm water; boil and simmer.

Jars for canning

There are many kinds of proprietary jars with tops that can be hermetically sealed, made especially for canning food. Most people use the very expensive

but extremely good "Mason" jars. These are easy to use and certainly very safe. The jars can be re-used and so can the metal bands, but the lids with the rubber rings must be used once only and then be discarded. It is worth considering ordinary screw-topped jam jars too. Some jams and jellies are also sold in suitable screw-top jars. Tops which have rubber rings stuck to the inside of the lid are best and will keep food for several years. Never let metal lids come into contact with the contents of your jars. Buy jars of a size you or your family can empty in a day, or at the most two days, because once you have opened a jar you must eat the contents before the bugs have time to get to work on it.

Heating jars You can heat the jars in any large pot filled with water on a stove. Unless your pot has a false bottom, lay a towel, piece of wood, or piece of tin inside it – anything to put the jars on to stop them touching the bottom. Otherwise they may crack.

Canning methods

There are three well-tried methods of canning fruit (including tomatoes).

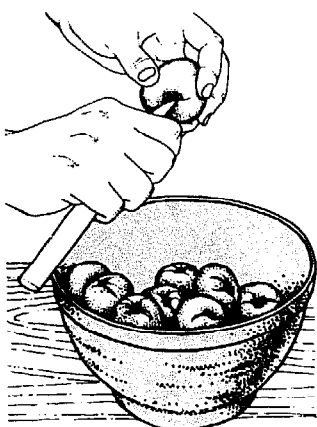
Cold water bath method Put the fruit into jars. If you are canning tomatoes, fill the jars with brine. If you are canning other fruit fill with a weak solution of sugar and water. Put the jars into a container of water on a stove; raise the temperature very slowly so that it takes an hour to reach 130°F (54°C), and then another half hour to reach the temperature given in the chart below. Use a thermometer to measure the temperature.

Slow oven method Put the fruit into jars, without adding any liquid. Cover each jar with a loose lid or saucer and put the jars into a low oven – about 250°F (121°C). Leave them in the oven for the time given in the chart on the facing page. Take them out and top up each jar with fruit from one of the jars (if there is any fruit left in that jar when all the other jars have been topped up, eat it for supper). Fill the jars with boiling brine (for tomatoes) or syrup (for fruit), screw on the tops and leave them to cool. Do not delay for more than a few minutes between taking the jars out of the oven and filling them with boiling liquor.

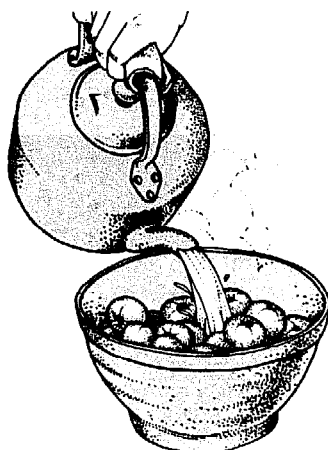
Hot water bath method This method is for people who have neither oven nor thermometer. Again use brine for tomatoes and other vegetables, and syrup – sugar and water – for fruit. Pack your jars with fruit and pour in boiling syrup or boiling brine – the jars must be hot first or they may crack. Put the lids on loosely – if

Preserving Garden Produce

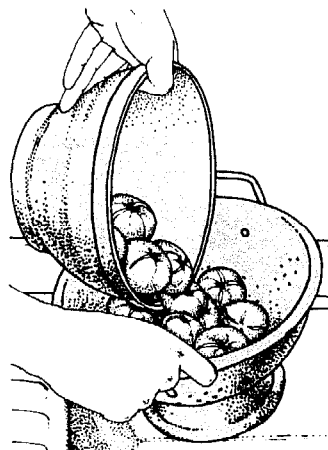
SKINNING TOMATOES



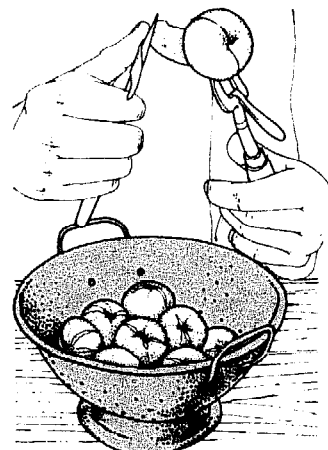
1 Remove the stalks from your tomatoes, and use a knife to score the skins.



2 Put the tomatoes into a bowl and pour boiling water over them. Leave for a few minutes until the skins have loosened.



3 Drain the tomatoes; cover them with cold water, but don't leave them for very long or they will go soggy.

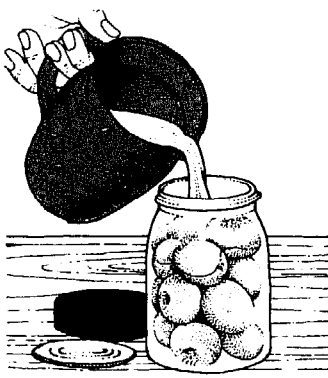


4 Using a sharp knife, peel off the skins carefully, so that the tomatoes keep their shape and don't lose any juices.

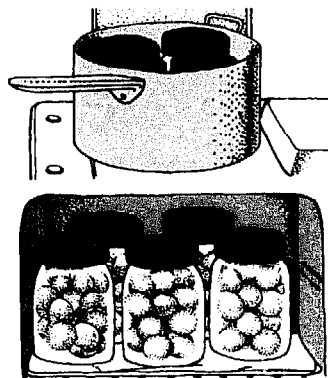
CANNING TOMATOES



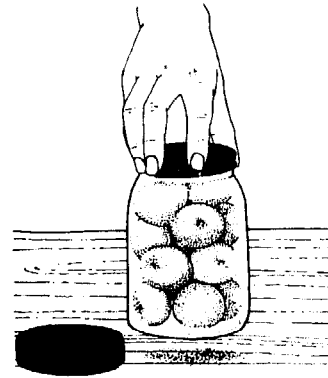
1 Pack skinned tomatoes tightly into jars, using a wooden spoon to push large ones into position.



2 Pour brine into the jars beforehand if you are sterilizing in water, afterward if you are using the oven. Fit airtight lids.



3 Put the jars into a pan of water or stand them on newspaper in the oven. Heat slowly in both cases (see chart, below).



4 When the jars are cool, check that they are vacuum-sealed by lifting them up by the lids alone.

TIMES AND TEMPERATURES FOR CANNING

	Cold water bath		Hot water bath		Slow oven	
Basic method	Take 90 minutes to bring water from cold to required temperature. Then follow instructions given below.		Start at 100°F (39°C) taking 25-30 minutes to reach required temperature of 190°F (88°C). Follow instructions.		Preheat to 250°F (121°C). Leave jars according to times given below.	
Liquid in jars	Put cold syrup or water in before processing.		Put hot liquid at 140°F (60°C) in before processing. For tomatoes, liquid is optional.		Add boiling liquid at end of processing.	
	Temperature	Time	Temperature	Time	Temperature	Time
Soft fruit Including apple slices.	165°F (74°C)	10 mins	190°F (88°C)	2 mins	250°F (121°C)	45-55 mins
Stone fruit and citrus fruit	180°F (83°C)	15 mins	190°F (88°C)	10 mins	Heat oven to 300°F (149°C) and put hot syrup in before processing them.	40-50 mins
Tomatoes	190°F (88°C)	30 mins	190°F (88°C)	40 mins	250°F (121°C)	80-100 mins
Purées and tight packs	Allow 5-10 mins longer than times shown above and raise temperature a little.					

they are tight the jars may explode — and lower them into warm water with the lids just above the surface. Bring to the boil and simmer for the length of time shown in the table below.

Skinning tomatoes

It is best to skin tomatoes before canning them. Do this by scalding them in boiling water and then plunging them into cold water. Score half round each tomato first and the skins will then come off easily.

Tomato juice

If you have plenty of tomatoes, a good way to store them is in the form of tomato juice. Cut tomatoes in halves and put them into a saucepan. Put the pan on a very moderate heat until juice begins to flow. Keep pressing down with a pestle, and, as the juice flows, move the pan to a hotter source of heat and boil for half an hour. Then strain the juice through a fine sieve or colander, and return it to the stove. Add salt and pepper to taste (I like a crushed chili as well), and boil for another half hour. Then pour the juice into hot sterilized jars and seal at once. The end result is infinitely better than the bought tomato juice which is packed with chemical preservative.

Canning rhubarb

Although rhubarb is not of course a fruit, it can be canned like one. Treat it as advised for "soft fruit" in the table on page 221. It is very good with elderberry juice added to it; this imparts a certain subtlety to the taste.

Opening jars

If you have trouble opening a jar, invert it in boiling water for half a minute and then unscrew. Jabbing a hole in the top renders the jar useless for further service, and the cost of special jars for canning is very high.

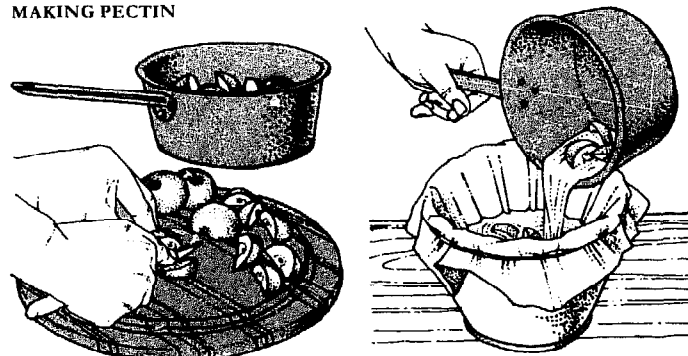
MAKING JAMS AND JELLIES

The secret substance that makes jam and jelly-making possible is pectin. This is released when the fruit is first cooked, and is what causes the jam or jelly to set.

There is plenty of pectin in apples, blackcurrants, red currants and gooseberries; there is less in plums (including greengages), apricots, peaches and raspberries; and there is hardly any in blackberries, strawberries, cherries, pears and rhubarb. When you make jam with fruit from the last category, you will need to add some pectin.

To add lemon juice is one answer and it does sharpen the flavor; a more common method is to combine high pectin fruits, like apples, with low pectin fruits like blackberries. The third alternative is to go about making a form of fairly concentrated pectin yourself.

MAKING PECTIN



1 Peel and core some apples and cut them up into chunks. Put them into a pan and simmer them gently until they are thoroughly softened.

2 Strain them through a jelly bag and pour the juice that comes through into sterilized hot jars. This is pectin.

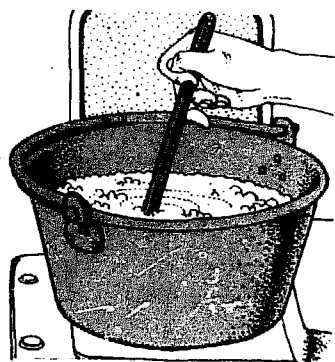
Pectin To make pectin, cut up apples and boil them until they are really soft; strain them through a jelly bag, pour the juice that comes through into sterilized hot jars, and cover the jars. For jam or jelly of any sort, use this pectin in the proportion of a pound (450 g) of fruit, 12 ounces (300 g) of sugar and ten ounces (300 ml) of the pectin or apple juice. The jam or jelly will then set whatever fruit is used.

Jams

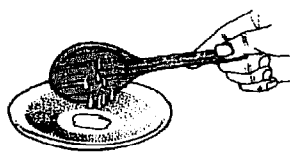
Jam-making simply involves cooking fruit with sugar. After you have softened the fruit by slow cooking so that the pectin is released, you add sugar and boil the fruit rapidly. Weigh the fruit first, so that you know how much sugar to add. Boil the fruit until setting point is reached. The setting point is critical. You can be sure when it has been reached by doing a simple test. After the mixture has boiled merrily for a while, take a little out in a wooden spoon and put it on a cold plate. If it is at setting point, a skin will form over the jam that will crinkle if you push it with your finger. The jam is now ready. If a skin does not form, allow the mixture to boil some more and try again.

Strawberry jam Take ten pounds (4.5 kg) of strawberries, eight pounds (3.5 kg) of sugar, and the juice of four lemons. Put the fruit and the lemon juice in the preserving pan and heat slowly, stirring gently. Add the sugar and boil until

TESTING FOR SET



1 Boil the fruit for some time in a large container on the stove, until setting point has been reached. You can tell when this is by doing a simple test.



2 Put a little of the mixture into a wooden spoon and place it on a cold plate. If the jam has reached setting point, a skin will form over it; it will crinkle when you push it with your finger.

setting point is reached. Then immediately take the pot off the fire, skim off the scum, stir the jam once, and pour it into hot sterilized jars. Cover the jars and store them.

Rhubarb jam This is much better than it sounds, particularly if you mix ginger with it. Take two pounds (900 g) of rhubarb, two pounds (900 g) of sugar, two lemons, and one ounce (28 g) of bruised ginger. Cut the rhubarb up small, put it in a bowl with sugar and lemon juice, stir it well and allow the juices to be drawn out. Then pour it into a saucepan, together with the ginger tied up in a muslin bag; boil until setting point is reached, and store the jam in sterilized jars.

Gooseberry jam Use slightly under-ripe gooseberries and boil them alone in a little water until they are soft; then add an equal weight of sugar and boil until setting point is reached.

Jellies

Jellies are made in the same way as jams, except that they are passed through muslin or a fine strainer, so that the solids are left behind. It is necessary to boil hard fruit for quite a long time to make jelly; soft fruit like raspberries or strawberries do not need quite so long. Use plenty of water for hard fruit and just enough to prevent burning for soft. Begin by boiling slowly to release the pectin. Add lemon juice if you are using low pectin fruit. Next comes the part that makes it jelly: you strain the juice out of the fruit through a muslin jelly bag or a fine-meshed strainer. It is the juice which makes the jelly.

With gooseberries, currants, blackberries and raspberries, you can often get two extractions of jelly-juice. After the first straining put the pulp

back in the saucepan with just enough water to make it a sloppy mess, boil it and strain it again. In this way you will get more jelly. Your chickens will enjoy the residual pulp.

Now you have your fruit juice. Measure its volume and weigh out a pound (450 g) of sugar for every 20 ounces (600 ml) of juice. Bring the juice to the boil, tip in the sugar and stir the mixture. Boil until setting point is reached, exactly as for jam. Then skim the brew, pour the hot jelly into hot sterilized jars, and cover.

Blackcurrant jelly Add ten ounces (300 ml) of water to every pound (450 g) of blackcurrants. Boil and strain the fruit, then add a pound (450 g) of sugar to every 20 ounces (600 ml) of juice. Boil the mixture until setting point is reached.

Blackberry jelly Add the juice of a lemon to every pound (450 g) of blackberries, and follow the recipe for blackcurrant jelly.

MAKING WINE

Making and consuming wine are two of the great joys of the self-sufficient way of life. And they are also extremely efficient methods of storing and ingesting goodness. I strongly urge you to try wine-making if you haven't already, for wine can be made from almost any vegetable or fruit that you have in surplus. However, there is no denying that grapes make the very best wine, and that certain vegetables and fruit — parsnips and rhubarb in particular — make a much more wholesome brew than others that I won't bother to mention.

Wine is made with sugar, in the form of fructose which comes from fruit, or sucrose which comes from sugar cane or sugar beet. This sugar is turned by yeast into carbon dioxide and alcohol. The carbon dioxide either escapes into the air or is trapped in the bottle where it gives the fizz to champagne and other sparkling wines.

Really ripe grapes will make wine by themselves without the addition of extra sugar or yeast. In fact pure grape juice, with nothing added to it at all, will of its own accord turn into wine. There is enough suitable yeast in the bloom and fructose in the flesh of ripe grapes. The yeast simply turns the sugar into alcohol.

But most of our "garden", or "country", wines are made from vegetables or fruits which do not contain sufficient sugar or suitable yeast. Thus sugar and yeast must be added.

Country wine

Many country wines are nothing more than cane or beet sugar dissolved in water, flavored with

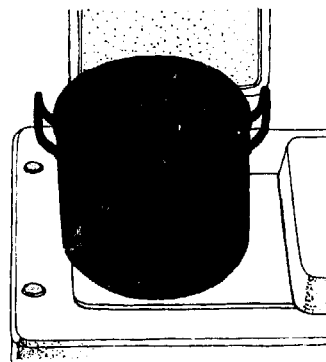
MAKING PARSNIP WINE



1 To make five gallons (18 l) of wine, you need 20 pounds (9 kg) of parsnips. Scrub them well, but do not peel them.



2 Chop the parsnips into cubes about two inches (5 cm) across, and put them into five gallons (18 l) of boiling water.



3 Boil the parsnips until a fork will penetrate them easily. Use a jug to scoop out ten ounces (300 ml) of boiling liquor. Keep this to one side. Later you will add yeast to it, and it will be your "starter."



4 While the bulk of the liquor is still warm, strain it into another vessel through muslin or a fine strainer.



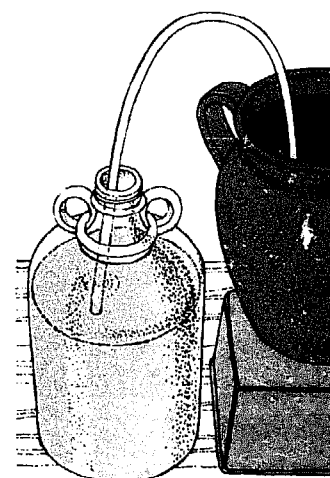
5 Stir in 12 pounds (5.5 kg) of sugar and two teaspoonfuls of lemon juice or citric acid.



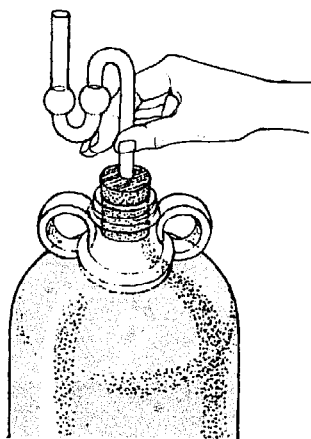
6 Stir two tablespoons of sugar into your ten ounce jug. Cool this mixture to blood heat by standing the jug in cold water. Add yeast and cover with a cloth.



7 When the bulk of your liquor has cooled to blood heat, add the starter which should be frothing well. Stir the mixture and cover it with a cloth.

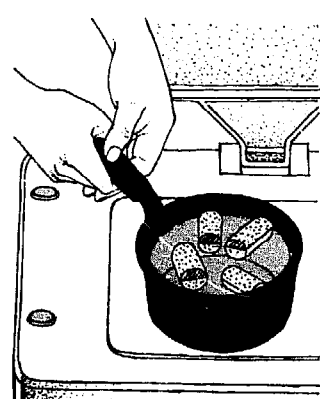


8 The next day move the vessel to a warm place and skim off the scum. Syphon the liquor into narrow necked containers through a plastic tube.

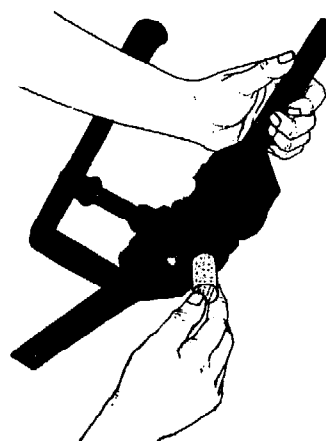


9 Seal the containers with fermentation locks, or cotton balls. When the bubbles cease to rise, rack the liquor into bottles leaving the sediment behind.

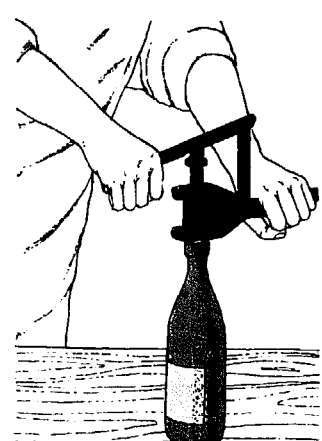
CORKING WINE BOTTLES



1 Cork wine bottles as soon as you have filled them. Put your corks in boiling water and take them out as you need them.



2 You can drive a cork in with a wooden mallet, but it is easier to use a corking tool. Open it up and fit a cork.



3 Rest the loaded tool on the neck of a bottle. Push down firmly on the lever to drive the cork right in.

the fruit or vegetable in question, and fermented with yeast. But the best country wines, and in my view the only ones that are worthwhile, are those in which the garden produce itself makes the wine, apart from the addition of a relatively small amount of sugar to assist the sugar contained in the vegetables or fruit. The good country wines, in order, as I see it, of quality and usefulness, are the following: parsnip, rhubarb, blackcurrant, raspberry, blackberry, strawberry, gooseberry, apple, pear, cherry, plum, and carrot.

Once you have learned to make one fruit wine you can make the lot, and once you have learned to make one root wine you can make all of them too. It is all common sense once you have learned the principles. To explain the principles I have written detailed directions for making two country wines: parsnip and blackcurrant. As long as you adjust the amounts of water, you can substitute another root vegetable for parsnips, or another fruit for blackcurrants.

Parsnip wine Of root wines parsnip is by far the best. Why it should be that this rather earthy root should make such fine wine I cannot say: I just know that it does. You need: 20 pounds (9 kg) of parsnips; 12 pounds (5.5 kg) of white sugar, five gallons (18l) of water; two teaspoons of citric acid or lemon juice; some yeast, ideally white wine yeast.

Scrub, but do not peel, the parsnips. Slice them into cubes two inches (5 cm) across, and boil them in the water until a fork will penetrate easily. If you boil them for too long, you will end up with a mush that will never clear. Strain off the liquor while it is still warm and stir the sugar into it. Pour in the lemon juice or citric acid. Wait until the mixture cools to blood heat and then add your yeast to it.

The best way to add the yeast is as follows. While the liquor is still boiling, scoop out ten ounces (300 ml), stir two tablespoons of sugar into it, and cool it quickly by standing the jug in cold water. As soon as it reaches blood heat add the yeast and cover with a cloth. By the time the bulk of your liquor is cool, your "starter", as this lesser amount is called, will be frothing merrily and can be added to the bulk. Stir it in with a wooden spoon, cover the container with a clean cloth, and leave. The reason for using this starter method is that it gets the yeast working more quickly in the bulk of the wine and there is less chance of alien organisms getting a hold.

The following day, after the first rapid fermentation is over, put the vessel in a warmish place —

room temperature. Skim off the scum, pour the wine into narrow necked containers. This is most easily done by syphoning through a rubber tube. Close the containers either with fermentation locks or pieces of cotton wool. This is to allow the carbon dioxide gas to escape, but to stop harmful organisms from getting in. When all fermentation has ceased "rack" the wine, which means pour it gently into bottles without disturbing the sediment. Cork the bottles and store.

If you want sparkling wine, put a teaspoonful of sugar and a couple of raisins into each bottle before corking. A secondary fermentation will then start in the bottles and form more gas to make the wine sparkle.

Blackcurrant wine This is the best of the fruit wines, except of course grape wine. You need: twelve pounds (5.5 kg) of blackcurrants; ten pounds (4.5 kg) of sugar; five gallons (18l) of water; and yeast.

Crush the currants; don't bother to top and tail them and, if some have short stalks attached, leave them on as well. Boil the water and pour it on, cover well and leave to soak. Stir once or twice daily. After three days strain into another bowl, and add the sugar and the yeast. Pour the mixture into fermentation jars and leave it in a warm place until the fermentation has stopped. Then move them to a cool cellar or store room for three weeks, rack into another container, and store this in the cold for six months. Then rack into bottles and leave to mature for a year — if you can.

Grape wine

Red wine 12 pounds (5.5 kg) of grapes should yield a gallon (3.7l) of wine. Crush the fruit — an easy way is to pass it through an old-fashioned mangle set on its side — but don't crush the pips. Put this, which is called the "must", in a big tub and rake most of the stalks and pips out — a few don't matter.

Unless your grapes are really ripe, in which case the sugar content will be sufficiently high, measure the specific gravity (S.G.) at this point. It is best to measure it with a hydrometer. If the S.G. is less than 1.075, which is called 75°, add sugar to bring it up to at least 1.075, or even more — 1.100 is sensible. To raise the S.G. by 5° you have to add three ounces (85 g) of sugar to a gallon of must.

Raise the temperature to 65°F (19°C) by taking a bucket or two out, heating the contents, and returning it to the bulk. It is a good idea at this stage to add a yeast starter. Stir the whole mass occasionally and constantly break the "cap" of

skins and floating debris on the surface and submerge it. Do this several times a day. Keep the vat covered with a blanket or sheet at all times when you are not actually working on it. When the S.G. has dropped to 1.010 draw the wine off from the bottom of the vat. If you want some really fine wine, leaving the rest inferior, keep this wine separate from that which you get from subsequent pressings. Next press the "marc" as the mass of grape tissue left in the vat is called. Wrap it in muslin and press it in a press. If you don't have a press, you can improvise with a car jack. Get every drop of juice you can out of it.

Now put all the wine into a cask or casks for the second stage of fermentation, and make sure that from now on the wine is protected by a fermentation lock; otherwise it will turn to vinegar. Here is a difficulty — you have to keep topping up all vessels so as to keep them absolutely full. Air spells danger. You may find it best to keep some wine in small containers and top up the big ones when necessary.

When the S.G. has fallen to 1.000 (that of water) you can replace the fermentation lock with a solid bung. You will still have to top up at intervals. After a few weeks rack the wine off its "lees" or sediment and bung it up again. Still top it up occasionally. After three months rack the wine again. You can now store it as long as you like — six months or a year — before you rack it into bottles.

White wine Follow the instructions for red wine, but press the grapes as quickly as possible and skim off the grape skins as soon as you can. Do not allow the must to ferment with the grape skins in it. Black grapes make white wine, just as white ones do: it is fermenting with the skins which gives the color to red wine.

Hygiene

Only with perfect hygiene can you make fine wine. To sterilize your vessels, wash them to remove any solid matter, scald with boiling water or heat in a hot oven, and turn upside down to drain and store. Wooden casks are especially difficult to keep clean. Steam them thoroughly by inverting them and allowing a pipe from the spout of a kettle to blow steam upward through the open bung. The condensed water will run out of the bung. Then fill them with a solution of half a pound (225 g) of washing soda in 24 gallons (90 l) of boiling water and let them stand for 24 hours. Empty them and rinse them out thoroughly in cold water.

MAKING CIDER

If you crush apples, put the juice into a vessel and leave the vessel covered against unwanted organisms, the juice will eventually turn into cider. But the cider will be terribly sharp, "rough" enough to make your hair stand on end and only a hardened drinker will be able to tolerate it. To make cider that will be more palatable to your neighbors, you will need to add sugar. If they are impatient and you want to speed up the fermentation process, you will need to add yeast. Wine yeast works faster than wild yeasts.

It is not always possible to estimate how much cider you will get from a given number of apples because apples vary considerably in their juice content. But as a rough guide you should get a gallon (4.5 l) of cider from 10 to 12 lbs (4.5-5.5 kg) of apples. The best cider is made from a combination of very sweet and very sour apples. This means that the mixture is rich in sugar and acid. If crab apples are added, the mixture will also be rich in tannin, and this improves it.

Don't hurry to pick your apples. Wait until they are really ripe — ideally, pick them ripe and then leave them to soften in heaps for two or three days. You can add windfalls and bruised or damaged apples to your heap as well — they don't seem to affect the quality of the cider at all. Then crush them. For this, a cider mill is ideal, but it is an expensive item to buy. Alternatively you can use any hard object, such as a mallet, as long as it is not metal. Crushing by hand is very arduous, however; you might try using an old-fashioned horizontal mangle, which I have seen prove just as effective. When the apples have been reduced to pulp, put the juice into a fermenting vat — a wooden barrel or an earthenware crock will do — and wrap the pulp in coarse cloth to form "cheeses". Then pile the "cheeses" on top of each other in a press, press two or three times to extract the juice, and pour the juice into your fermenting vat. Add a culture of yeast if you wish.

If you want a sweet cider, rack the fermenting cider off its lees (siphon it off without disturbing the sediment), and for every 12 gallons (45 l) add approximately six pounds (2.7 kg) of sugar. Allow the cider to ferment another week, then rack it again.

If you don't have the space or the means — or the apples — to make cider on this scale, there is a simpler method of making it on a small scale. Cut up your soft ripe apples very small, pulp them if you can, put the pulp in a crock and cover it with boiling water. Leave the crock covered for ten days, then strain off the liquid, add 12 ounces

(400 g) of sugar to each gallon (3.7l), bottle and fit airlocks or cotton swabs to the bottles. Cork after two weeks. The cider will improve with keeping.

If you want a sparkling cider, start by bottling a small quantity. Half-fill a screw-topped flagon, screw it up and leave it in a warm place. Six hours later open the flagon. If the cider has thrown a heavy deposit and if the flagon is filled with gas, the cider is not ready for bottling. Wait until there is no heavy sediment and the cider just gives off a little fizz of gas.

You can make an apple wine from crab apples that is sharper and sweeter than cider. Add about eight pounds (3.6 kg) of sliced crab apples to a gallon (3.7l) of water, cover and leave to soak for a week. Then strain and add two and a half pounds (1.2 kg) of sugar to every gallon (3.7l) of liquor. Leave to ferment for three days, skim off the scum, and rack into another vessel. After about two weeks, when the fermentation has ceased, rack into bottles and cork.

MAKING MEAD

To make mead you need two and a half pounds (1.2 kg) of honey to a gallon (4.5l) of water. If you cannot spare this much pure honey, you can make up part of the required amount with comb cappings, bits of broken comb and other honey oddments. Melt the honey in the water – don't boil it – and ferment. But as honey is deficient in acid and tannin – both necessary for proper fermentation – you will need to add these. The juice of three or four lemons will provide the acid; half a pound (225 g) of crushed crab apples will supply the tannin. You could add tea – I have heard of this but never tasted the result.

When the honey has dissolved, add your yeast starter. Leave it to ferment, then rack and bottle. But be prepared to wait a long time for your mead to be ready. It will take at least six months to ferment: if you can wait longer – two or three years – the mead will be even better.

FREEZING

If you have a food freezer, allow plenty of space for your meat and fish because these cannot easily be stored in any other way. Vegetables can be stored in other ways and should therefore take second place. However, as long as you have ample freezer space – six cubic feet (0.22 cu m) per member of the household is pretty adequate – you may like to freeze the following vegetables, which freeze easily and do not suffer from the process unduly: globe artichokes; asparagus; all kinds of

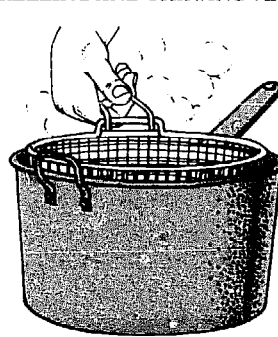
beans; Brussels sprouts; cauliflower; sweet corn; peas; sweet peppers. Pumpkins and tomatoes freeze well if you puree them, and you can freeze tomato juice, if you don't can it (see p. 221).

Unless you have meat to freeze, or intend to buy cheap meat wholesale and store it by freezing, think hard before you buy a freezer. The money you spend on it initially, and on maintaining it, replacing it, and running it, would buy an awful lot of food. I personally do not think it's worth buying a freezer for vegetables alone. If you do buy one I would strongly recommend you to get a chest freezer, rather than an upright one. Upright freezers lose all their cold air every time you open the door; because cold air is heavier than warm air, it just flops out.

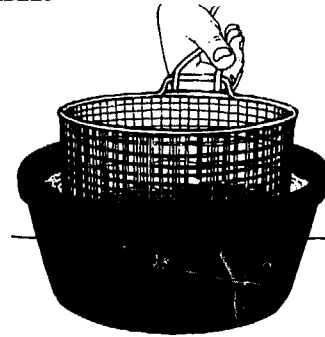
Freezing vegetables

All fruit and vegetables should go to the freezer as soon as they are harvested. To leave them sitting about allows the sugars to start turning into starches and thereby the flavor is lost. If you

FREEZING AND THAWING VEGETABLES



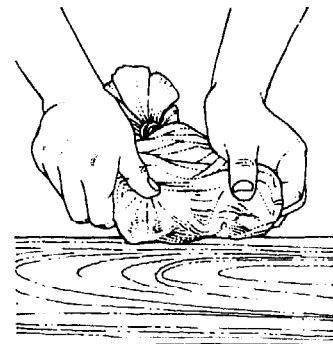
1 Before you freeze vegetables you must blanch them. Use a wire basket to immerse them in boiling water for a short time – between two and four minutes.



2 Remove the vegetables from the water and immediately plunge them into cold water for the same number of minutes.

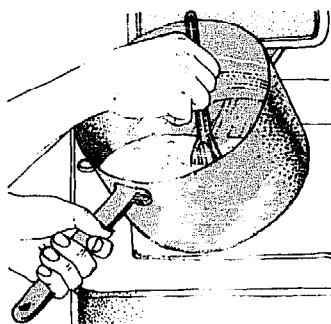


3 Let the vegetables drain. Then, put them in a plastic bag, and suck the air out through a straw. Put the bag in your freezer.

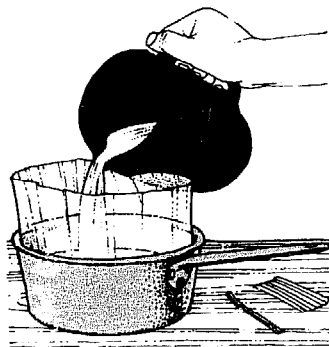


4 To thaw frozen vegetables quickly, bend the bag about with both hands. This will break up the ice and separate the vegetables.

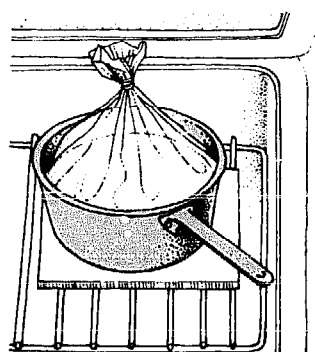
FREEZING SOUP



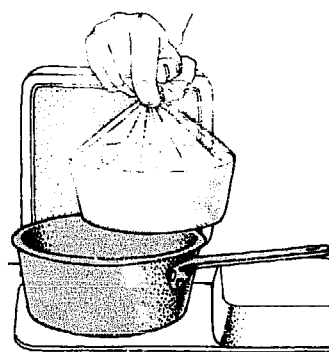
1 To freeze soup, first prepare the soup and allow it to grow cold in a cool place; don't put it in the refrigerator.



2 Put a plastic bag inside the saucepan which you will use to reheat the soup. Pour the soup into this bag, which should be a special "freezer weight" bag.



3 Put the saucepan containing the plastic bag and the soup inside the freezer. When the soup has frozen solid, remove the saucepan.



4 When you want to reheat the soup, remove the plastic bag and drop the frozen lump of soup into the saucepan. It will heat up very quickly.

haven't time to prepare the food for freezing immediately, put it in the freezer as it is for a few minutes to chill it, but don't let it get frozen solid.

You should blanch most vegetables before you freeze them to inactivate the enzymes in them. This means plunging them into boiling water. Two or three minutes in the water is adequate for most vegetables, but a big solid thing, like a globe artichoke, should have four minutes. Blanching is easy if you use the wire basket you fry French fries in. When you remove the vegetables from the boiling water, plunge them straight into cold water with ice floating about in it. If you can, chill some water in your refrigerator the night before, preferably in large containers like cake tins. Dip the blanched vegetables, in the wire container, straight into the cold water, and pull them out after the same number of minutes that they were in the boiling water. Let them drain thoroughly and pack them in containers. They must be quite dry by this time.

If you pack them in a plastic bag, expel all the air by sucking it through a straw before you put the twist-tie on to stop it getting in again. It is a good idea to stuff the filled plastic bag into a carton. This gives it a square shape which stows more easily and makes better use of freezer space.

Freezing soup

When you freeze soups, put the plastic bag containing the soup inside the cooking pot that you intend eventually to reheat it in. The top of the pot must be wider than its diameter lower down. Put the pot into the freezer and, when the soup has frozen, pull it out. Knock the plastic bag with its block of frozen soup out of the pot, and pack the block in the freezer. When you come to heat the soup, just remove the plastic bag, and drop the frozen soup into the pot.

Sweet corn responds very well to freezing, and when it is unfrozen it is still fresh and sweet. It is best to freeze the kernels only; it is a waste of space to freeze whole cobs. Cook the corn on the cob first for ten minutes. Let it cool, and strip the corn off the cob with a knife. Let it drain, then pack it in containers and freeze. When you want to eat it, just simmer in water or milk for two to three minutes.

Freezing soft fruit

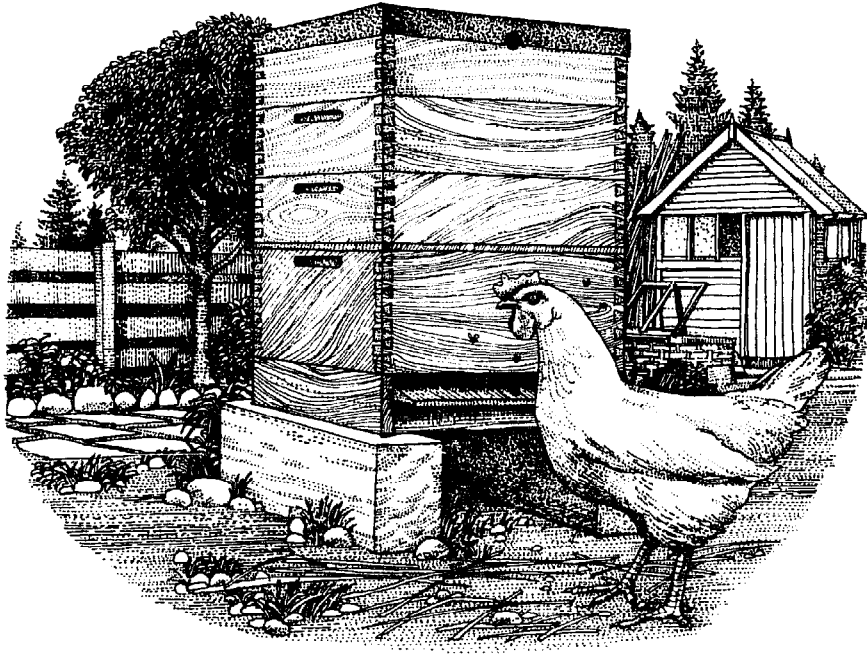
Soft fruit can be frozen in syrup, or in dry sugar, or just by itself. I always freeze it by itself because I can add what I want when it is unfrozen. You can just put soft fruit into containers and pack them in the freezer without more ado. Some people like to wash soft fruit in ice water before freezing it. If you do this you must dry it thoroughly before putting it in the freezer.

Containers for freezing

Everything you put in your freezer must be wrapped up in an airtight container; otherwise it just dries up. You can just use plastic bags, but there are more sophisticated containers made from waxed cardboard, plastic, glass and aluminum foil. Coffee tins with plastic tops are good for storing things in freezers, and so are glass jars. Beware of freezing food in any container which curves in toward the top, so that you can't get the food out before it thaws. Food will thaw much more quickly once it is out of its container. If you use plastic bags, make sure they are "freezer weight" bags: thin ones are not really suitable, although you can use them at a pinch. Once filled, the container must be sealed firmly.

CHAPTER TEN

Miscellany



Containing the keeping of poultry, rabbits and bees, the laying of paths and drains, the mending of fences, the maintenance of tools, the life of seeds, the variations of climate and other topics.

Miscellany

CHICKENS

Chickens provide you with a constant supply of good fresh eggs, with chicken manure to activate your compost heap and with occasional table poultry. So chickens may well make the difference between just growing a few vegetables and true self-sufficient gardening. There is a great deal to learn about keeping chickens, and before starting the beginner will be wise to seek advice from an experienced neighbor.

Anyone who understands organic gardening will appreciate that chickens must be allowed to scratch about outdoors as nature intended; to keep them otherwise is cruel and breaks the cycle of nature which is so beneficial to the garden. I know people who happily let hens run in their

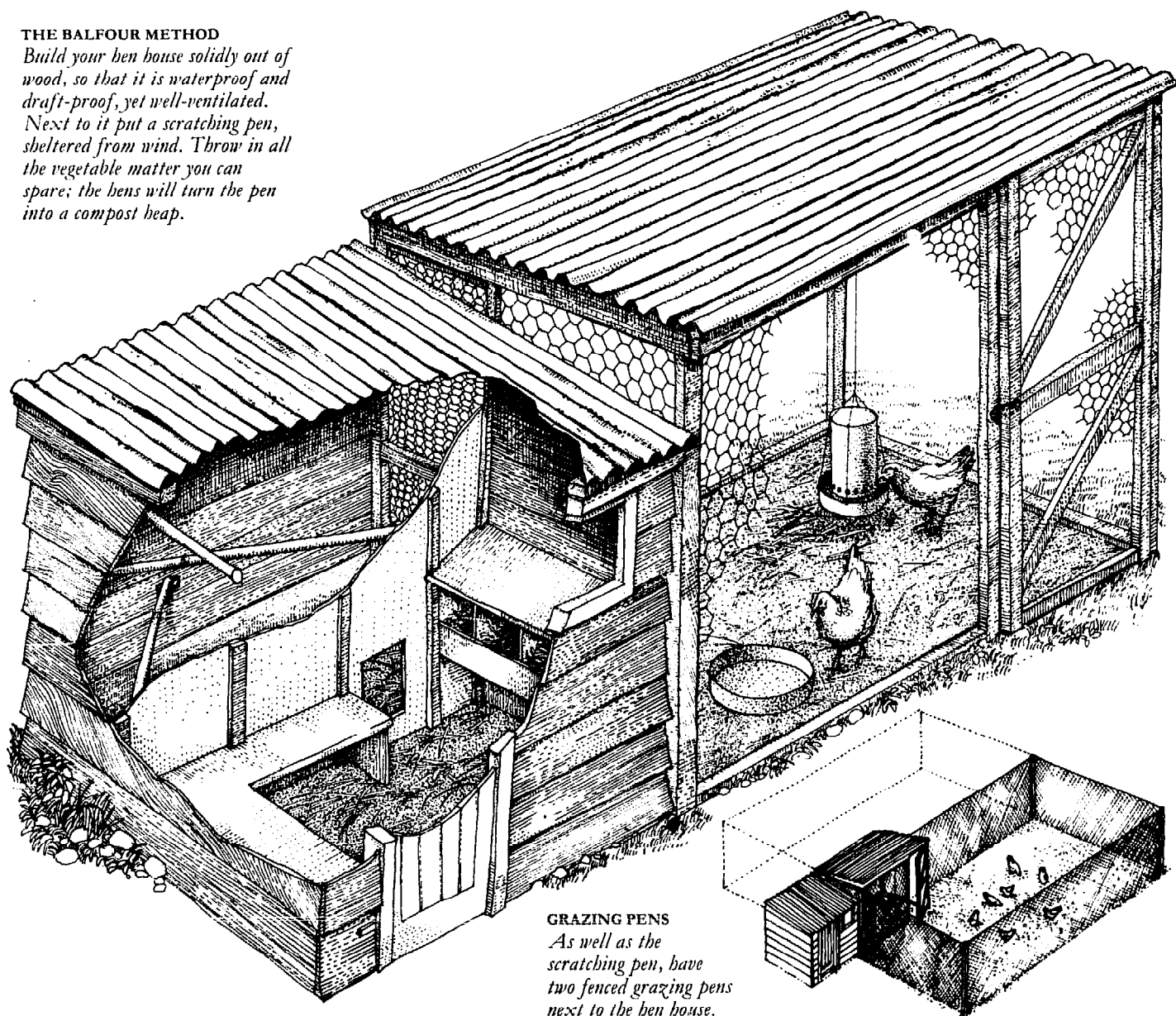
gardens most of the time. They do some damage, but also do good because they eat insects. But I personally haven't got the nerve to do this; a hen can scratch up a new seed-bed in half an hour flat.

The Balfour method

If you have only a small garden and do not want to let chickens run loose on it, you can still keep chickens, using the Balfour method — so named after Lady Eve Balfour who invented it. With this method you will not need a separate compost heap, because the hen run is the compost heap. You take an ordinary hen house — that is a good, solid, waterproof, draft-proof, well-ventilated wooden house with perches and nest boxes inside it. In front of it or around it you have a

THE BALFOUR METHOD

Build your hen house solidly out of wood, so that it is waterproof and draft-proof, yet well-ventilated. Next to it put a scratching pen, sheltered from wind. Throw in all the vegetable matter you can spare; the hens will turn the pen into a compost heap.



GRAZING PENS

As well as the scratching pen, have two fenced grazing pens next to the hen house.

scratching pen which ideally should be sheltered from wind. This becomes your "compost heap". You throw into this area all the vegetable matter you can get; the more the better. All the kitchen scraps, all the waste material from the garden, plenty of straw, bracken, spoiled hay, grass clippings, everything you can lay your hands on goes into it. Your hens spend hours scrapping about in this material, because worms, earwigs and other insects abound in it.

Apart from the scratching pen you should have two grazing pens – or three if you can afford the space. These are just fenced pens, with gates arranged in such a way that the hens can be admitted into one of the pens while being denied access to the other. The two pens should sown with a grass, clover and herb mixture. You allow the hens to run in one pen for two or three weeks, until the grass is eaten right down; then you admit them to the other. Because the hens are doing most of their scratching in the scratching pen they should not tear up the grazing pens too severely. If you find that they do, you can limit their access to only a few hours a day.

The Balfour method has several advantages. Even though your property may be very small, your birds have access to herbage; at the same time the herbage is not lethally damaged by the hens' scratchings; the main thing is that the scratching pen provides a quantity of magnificent compost. Every few weeks you empty the

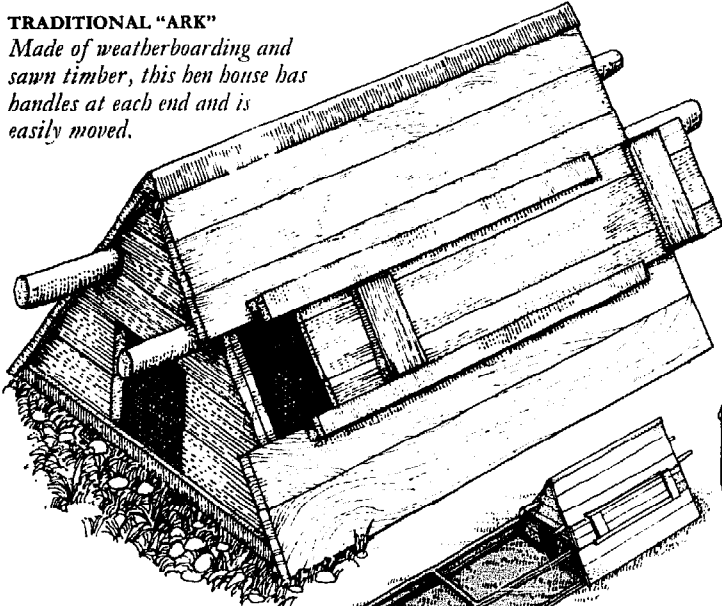
scratching pen completely and build it into a proper compost heap. You need add no extra nitrogen to activate it.

A refinement of the Balfour method is to arrange things so that after a year or two you can pull the fences down from the scratching pen and the two grazing pens, and re-erect them on the other side of the hen house. Open the pop-hole on that side so that the hens can make use of the fresh ground, while you dig up their former pens and bring them into cultivation as part of your garden. You will thus regain the very considerable fertility built up by the hens.

Another possibility is to give your hens access to your soft fruit patch, and to your tree fruit orchard, during the winter. Hens can roam among fruit trees all summer as well, and they do a lot of good by killing many of the insects that would otherwise harm the trees, and by fertilizing the soil around the trees. They do a good job among soft fruit bushes too, except that obviously you cannot leave them there when the fruit is ripe or they will eat it. There is also a danger that they will eat the buds in spring. But certainly in winter it can do nothing but good to let them run among your bushes and trees. You will be sparing your Balfour grazing pens, so that they are more productive when spring comes and the hens have to be moved away from your soft fruit. If hens are run temporarily over any bit of land they will do it good: and the more changes they get the better.

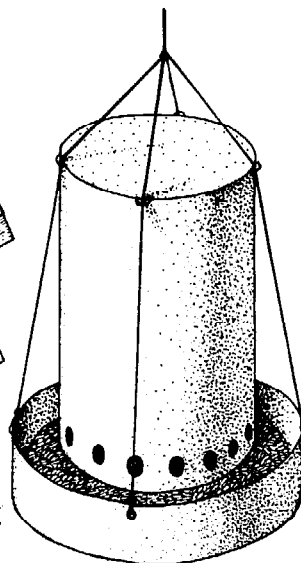
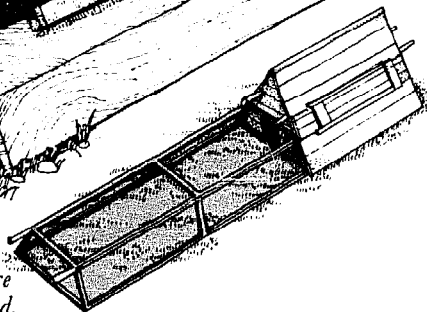
TRADITIONAL "ARK"

Made of weatherboarding and sawn timber, this hen house has handles at each end and is easily moved.



DEEP BED HEN RUN

Build the run like a mini-greenhouse but cover it in wire netting. Fit it over a deep bed.

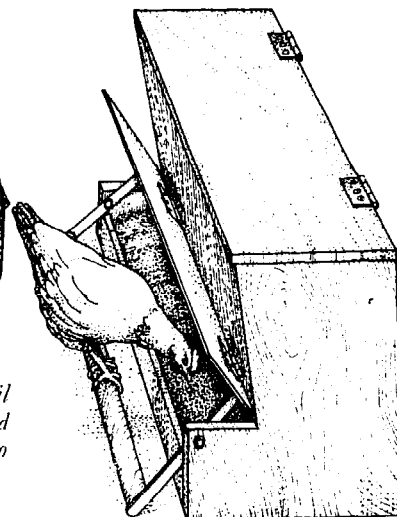


WORTHINGTON HOPPER

This trough is placed in the hen house away from birds and out of the reach of rats. The hens open the lid with the weight of their own bodies.

SELF-FEED HOPPER

This hopper, made from an oil drum with holes drilled around the base, is hung up for hens to peck at. The base of a larger drum catches spillage.



Chicken-tractor

Another way of keeping hens in a small garden is the amusingly-named "chicken-tractor", which is being developed at the Santa Barbara Urban Farm Project in California. This is still at an experimental stage and the exact effects it will have on your soil are not known. But used in the right way, it should considerably improve the fertility of your garden.

The tractor is simply a hen run, with a sleeping shelter attached to one end of it. The shelter should contain nesting boxes and have a floor made of spaced wooden dowels. The run itself can be built to fit exactly over the standard 20 foot by 5 foot (6m x 1.5m) deep bed (see p. 106). If you don't use deep beds, then build the run to the dimensions of your vegetable beds. Construct it in exactly the same way as the "mini-greenhouse" described on p. 111; the only difference is that you cover it with wire netting instead of plastic. It need have no floor.

The run can be separated from the night shelter so that it can be moved easily by two people, and then re-attached. The night shelter can be carried, even with the birds in it.

Eight hens is the ideal number for a chicken-tractor. You place the run over one deep bed, which should have had rye or some other quick-growing grazing crop sown in it a month or two beforehand, to provide the hens with something to eat. The hens manure the bed, scratch it over deeply and eat all the insects they can find. They also destroy all the weeds. When another bed is ready to receive them, you just move the "tractor" on to it. The old bed will be well-manured and weed-free; dig it up and plant vegetables or fruit.

Feeding chickens

There are several views about feeding chickens: most orthodox methods recommend feeding a dry mash prepared in controlled quantities. I favor what is known as the Worthington Method (named after its inventor). This is simply that you allow hens ample greenstuff -- this means a lot of greenstuff, not just cabbage. You also let them have access to whole grain -- wheat is best -- and some high protein food such as fish meal.

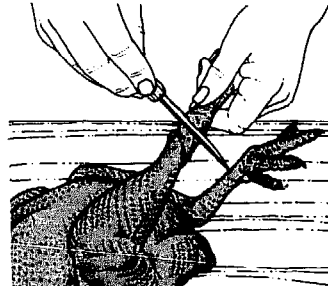
Let them feed as much as they want of whatever they want, and you will find that they eat a balanced diet, do not overeat and lay plenty of eggs. What they eat will, in practice, average out at about four and a half ounces (128 g) of wheat per day each, and well under half an ounce (14 g) of fish meal. For fish meal you can substitute any other high protein food: soy meal; chick peas;



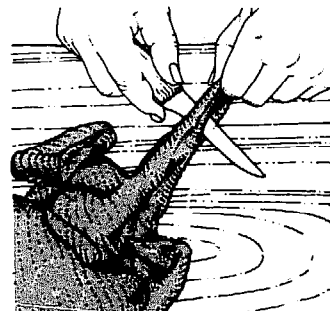
KILLING A CHICKEN

Take the legs in your left hand; hold the neck in your right hand so that it protrudes through your two middle fingers, with the head cupped in your palm. Push your right hand down and turn it so that the head bends back. Stop when you feel the backbone break. If you can, pluck the bird while it is still warm; the skin is far less likely to tear.

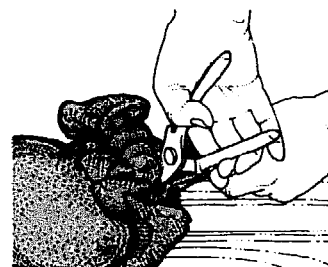
PREPARING THE CHICKEN



1 After you have plucked the bird, cut around its legs with a sharp knife and proceed to draw out the tendons.



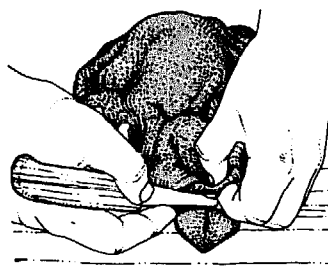
2 Cut the head off, and slide the knife down the neck to leave a flap of skin.



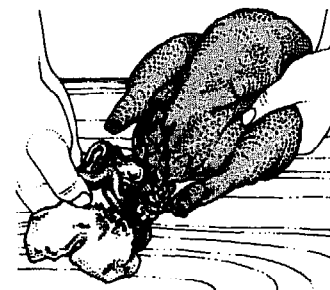
3 Break the neck off further down than the flap, using a pair of kitchen scissors. You can then use it along with the giblets.



4 Put your finger into the hole left by the neck, and twist it round to break the ligaments which hold the innards.



5 Cut all the way around the anus, taking care not to make a mess of the guts.



6 Put your hand in and pull out all the innards, including the lungs. Then wash the bird well inside and out.

cracked beans; meat meal or flakes. I knew a man who used to get fish heads and guts from a fisherman, boil them up, and offer them to his hens. They laid superb eggs. As for the whole grain, use good oats or barley if these are more plentiful than wheat in your area.

Other garden produce which contains protein and is good for hens includes: sunflower seed, especially if you husk and grind them; lupin seed, ground or whole; peanut seed; alfalfa meal; crushed or ground peas and beans. If you grow too many potatoes it is a kindness on cold winter evenings to boil some up with a little skimmed milk, or milk gone sour, or water the fish was boiled in, and feed them to the hens before it gets too dark.

If you feed your hens according to the Worthington scheme you must feed them on this diet from an early age and you must feed them from hoppers. These should be in the hen house away from sparrows, and hung up or set up in such a way that the rats can't get at them. The Worthington hopper is a most excellent device and will save pounds of food over the years. The hens open the lid to the trough by the weight of their own bodies.

All poultry must at all times have access to dust baths, fresh water and sharp grit — they use grit instead of teeth. Also lime-rich material, such as crushed sea shells, is very good for them.

If you are kind to your birds they will be kind to you. But kindness should not go so far as keeping on non-laying birds for months. Cull the too fat, the too thin, the sick, lame and lazy, and they will do you the final favor of making you some excellent soup.

Breeding chickens

You won't get any more eggs if you keep a cockerel among your hens, but your eggs will be fertile. Then, if a hen goes broody, you can let her sit on her eggs and soon you will have some young chickens to increase your flock, to eat, or to sell. Nine times out of ten if you leave a broody hen alone and at peace to sit on her eggs, she will bring them off and care for the chicks, with no trouble at all.

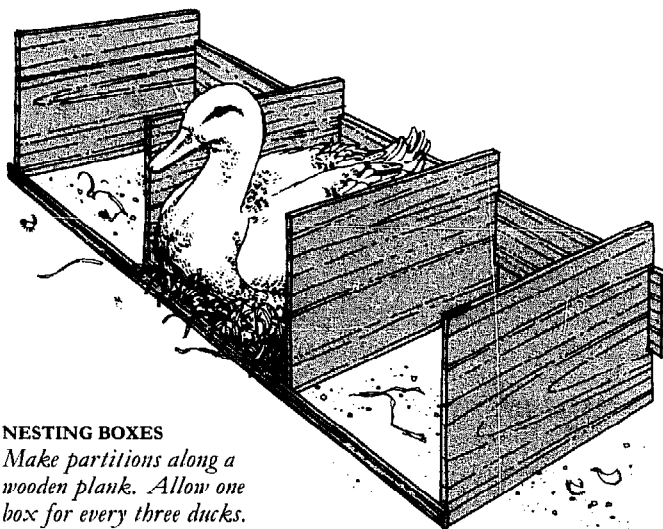
Feed the chicks the diet recommended for ducks for a few days. If you wish to eat the chicks, feed them freely. It is better to feed them mash (a mixture of grain meal and protein), and a proprietary mash is quite adequate. Either kill them at ten weeks as "broilers" weighing two or three pounds, or keep them until they are 14 or 15 weeks old and kill them as "fryers".

DUCKS

If you have a pond, or a stream running through your land, consider keeping ducks. They will provide you with eggs and meat. Duck eggs are delicious as long as they have not been lying in dirty water or mud; and some breeds such as Khakis and Campbells lay more eggs than chickens do. It is cruel and unnatural to keep ducks away from water on which they can swim. Pond water must be clean and changed from time to time.

Breeding ducks

If you keep a friendly drake and up to six ducks at the bottom of your garden, the ducks will lay eggs and hatch them. If you manage things well, you can have a constant supply of eggs and meat. However, ducks make very bad mothers. Always confine a mother duck, even if you leave her ducklings free to wander away and come back to her, otherwise she will drag her brood through



NESTING BOXES
Make partitions along a wooden plank. Allow one box for every three ducks.

mud and wet grass, weakening them and even possibly killing them.

Chickens are much better at hatching out duck eggs than ducks are, so it is best to put fertile duck eggs under a broody hen if you have one. Otherwise treat ducklings in just the same way as you would treat young chicks.

You can also hatch duck eggs in an incubator. In this case, brood the ducklings at 94°F (34°C) for the first week, lower the temperature gradually to 50°F (10°C) the second week and never let the ducklings get chilled. After two weeks let them run out, but provide warm shelter, as well as giving them access to shelter from the sun.

Duck eggs take 28 days to hatch. When the ducklings are first hatched, feed them four or five times a day on a rich mash made of grain meal,

preferably barley, with milk and a mashed hard-boiled egg in it. After three or four days you can reduce the number of times you feed them, but not the total amount of food. Leave out the egg, and, if you want to, you can give them bought pellets, and a little grain instead of, or as well as, the mash. They will do well on boiled-up kitchen scraps, or boiled potatoes and greens. Ducks are omnivorous, so you can give them meat or fish scraps.

Older birds should be fed exactly the same diet as chickens (see p. 231). But don't let them get too fat or they won't breed. Ducks need plenty of clean drinking water at all times.

You should kill table ducks when they are eight and a half to ten weeks old — no sooner and no later. A duck should have eaten about 20 pounds (9 kg) of feed by this time and should weigh about three and a quarter pounds (1.5 kg).

GEESE

You should only keep geese if you have surplus grass, because they are essentially grazing birds. So if you have a big garden or orchard, it will pay you to buy some young geese in the early summer and fatten them for eating in winter and, of course, at Christmas. As well as grass, feed them any surplus lettuces or other greens you happen to have, and about a fortnight before you kill them feed them heavily on barley meal or boiled potatoes.

Breeding geese

If you wish to breed geese, rather than just fatten young geese, you must of course have a gander, although you can get started by buying some goose eggs and putting them under a broody hen. She will hatch the eggs and look after the young goslings. People commonly keep two or three geese per gander. After 20 years of keeping geese, I have come to the conclusion that it is better to have just a pair. Geese are naturally monogamous. If you allow a goose to sit on her eggs in her own good time, helped and guarded by the gander, you will end up by rearing more live geese over the years than if you have one or more importunate auntie geese flapping around trying to sit on the eggs, or laying fresh eggs in a clutch already started.

Another factor to consider is that geese do not take to each other as readily as ducks and chickens do. A pair will probably have to be kept together for a minimum of six weeks before they will mate at all, and it may take two or three years before a goose is really breeding well. But once a pair is successfully established, you can expect a long

productive life from them. There are records — dubious admittedly — of geese breeding for more than 70 years, but if you estimate an average of about ten years for a goose and five for a gander you will be about right. On the whole, geese make good sitters and good mothers, and ganders are usually attentive to the young as well. Eggs take about 28 days to hatch.

Make sure that a sitting goose gets enough to eat, as she will frequently be unwilling to leave the eggs even to feed. When the goslings are ready to leave the nest they may be allowed to run out with their mother. If they are given the chance they will start grazing before they are a day old, and will thrive on good grass. For the first three weeks of their lives feed them well on bread soaked in milk. Goslings grow very fast in the first 12 weeks of life, by which time they may already weigh as much as two thirds of their eventual adult weight.

PIGEONS

If you have a family of four and you want to eat "squab", young pigeon, once a week, you should keep five pairs of breeding pigeons, because a couple can be expected to hatch out ten a year. When the undersides of the wings are fully feathered they are ready for eating. This should be when they weigh about a pound (500 g) and are four and a half weeks old. Do not let them get much older than this, as they lose weight and also inhibit their parents from breeding. Kill, pluck and truss them just like chickens.

Housing for pigeons

Pigeons are strictly monogamous; you should allow four square feet (0.37 sq m) of house-space per pair. Thus a pigeon house five feet (1.5 m) by four feet (1.2 m) is ideal for 5 pairs. You need more nesting boxes than you have pairs of pigeons: seven is about right for five pairs. Orange crates make fine nesting boxes. It is important that the pigeon house is rat-proof. If you build one specially, raise it on legs with inverted dishes under them to stop rats climbing up. The house must also be draft-proof.

Feeding pigeons

Pigeons on free range need a little grain thrown to them every day, as well as some chick peas or other high protein seed. Give them as much as they can clear up in twenty minutes. They will forage for food, but they will probably do very little harm to your vegetables and fruit.

RABBITS

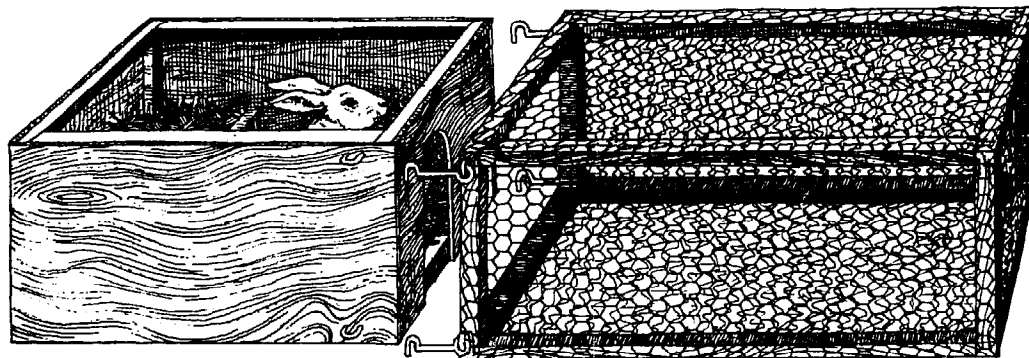
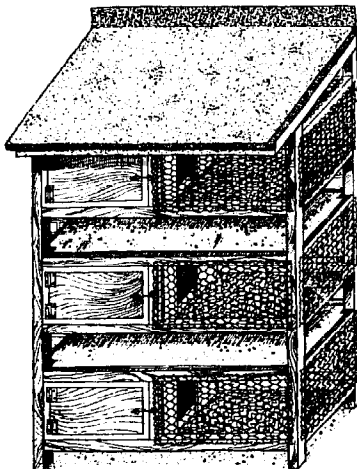
If you aim to be self-sufficient in food and you have a small garden, few things will contribute so much to your ideal as rabbits. In the first place, just one rabbit will provide three cubic feet (0.84 cu m) of droppings a year, which is enough to activate a big compost heap. Together with the soiled litter cleaned from your rabbit run, this equals a fertile garden. Plants and animals evolved to co-exist and to support each other's life systems. Rabbits play their part especially well.

The other thing about rabbits is that they will give you excellent meat. Rabbit meat is very nutritious, free of fat, comes in convenient-sized parcels (one rabbit makes a splendid meal for a small family), and rabbits are easy to kill and to process. Any family can have one rabbit a week to eat, simply by keeping two does and rearing their litters for food.

A doe should have from four to five litters a year, each of about six babies. A doe should live

RAISED HUTCHES

This is a space-saving method of keeping rabbits. The hutches are one on top of the other, and raised a few inches off the ground. Keep them outside, up against a wall, with a lean-to roof positioned carefully above them to keep the rain off. The floor of each hutch is made of galvanized wire mesh, and a metal tray slides in between each hutch to catch droppings.



for about two years, but it is the easiest thing to rear up replacements. An important consideration is getting your does "in kindle", or pregnant. If you have a neighbor who keeps a buck, and if he is satisfied that your does are completely healthy and you are satisfied his buck is, you can take your does to be mated. If not, you can, if you want, keep a buck to two does – or even to one. But ten does to a buck is the optimum. With a ten-doe rabbitry you really are in business though. Consider: about 300 rabbits to kill a year. But, if you think about it, that number of rabbits will completely pay your meat bill, for, after you have eaten all the rabbit meat you can stomach, you will have enough to sell to pay for all the meat you want for your family and a lot more besides.

Another thing to remember is that, if you do have to buy food for your rabbits – and you likely will if you have ten does – this food not only feeds the rabbits, it feeds your garden too and in the end feeds you. The same applies to straw or bracken that you bring in for litter. Even if you have to buy the straw, you are not just buying rabbit's bedding, you are buying fertility for your garden. Therefore there is every reason for keeping rabbits.

Caring for rabbits

There is work involved in keeping rabbits of course – particularly when you are getting started, but the thing to do is start small – say with two does and a buck – and build up gradually as you gain experience. Once your rabbitry is established there is not so much work to do: minutes a day rather than hours.

You must consider the various needs and the instincts of rabbits and try to allow them to satisfy them. To keep a rabbit in a wire cage and feed it on nothing but pellets and dry hay is cruel. To allow it access to the ground in summer, so that it can nibble fresh grass and scratch the earth, is kind. And to keep it in a warm dry place in

MOVABLE HUTCH

This hutch, or arle, consists of an enclosed area three feet by two feet (90 x 60 cm) and 18 inches (45 cm) high; if it contains a doe, it should have a nesting box inside it. Attached to the hutch should be a wire netting pen at least four feet by two feet (1.2 m x 60 cm).

winter and feed it on a variety of fresh green things is kind too. You can keep rabbits out of doors in movable hutches all winter as well, but this may not be ideal in cold climates.

Another requirement for rabbits is privacy. Their wild ancestors lived in holes so you must give them the equivalent of holes to retire into. It is cruel to keep them out in the light all the time, or under the gaze of other animals.

Housing for rabbits

There are two basic forms of housing for rabbits. One, the kindest if it is done properly, is to have movable hutches, or arks, out of doors on grass. These can consist of an enclosed hutch three feet (90 cm) by two feet (60 cm) by 18 inches (45 cm) high and, if it contains a doe, put a nesting box inside it. Attached to this should be a wire netting pen at least four feet (1.2 m) long and two feet (60 cm) wide.

The other form of housing is raised hutches, either against a wall outside or, better still, in a shed. If you have them outside I strongly recommend you have a simple lean-to roof over the hutches just to keep the rain off both you and the rabbits. Few things can be more unpleasant than cleaning out stinking wet rabbit litter from under stinking wet rabbits. If rabbits are kept dry, and warm, they will be healthy and will not stink at all. And remember that rain can come horizontally as well as straight down, so be sure to arrange things so that, whatever the weather, neither litter nor rabbits get wet.

If your hutches are indoors, the alley for you to walk in front of them should be at least three feet six inches (105 cm) wide. The ceiling of an indoor rabbit house should be between eight and ten feet (2.4-3 m) high. If it is too low, it will be stuffy; if it is too high, it will be too cold.

If a raised hutch has wire floors, the galvanized mesh should be 14 to 16 gauge $\frac{3}{4}$ inch by $\frac{3}{4}$ inch (2 x 2 cm) mesh. You should have a wire mesh floor only under the outer eating and dunging pen. The sleeping quarters, which should be private and dark, should have a solid floor. Wood is the best material for building hutches, because it is warm. If you do not use tongue-and-groove boarding, coat the hutches with asphalt.

Interior fittings should be kept simple. A rack for hay is very important — you will waste far less hay this way. A bottle drinker — or else piped water laid on to automatic drinkers — will save endless time and be better for the rabbits. Rabbits must always have plenty of clean water. This is

essential for their health and don't believe any wiseacre who tells you anything else. If you feed them pellets, a hopper is very useful, or, failing that, some sort of dish which prevents the rabbits from scraping the pellets out and wasting them.

Mating and breeding

Don't buy old or supposedly "in-kinde" does to start off with: buy young does, let them get used to their new homes, and put them to the buck when they are twenty weeks old. At twelve weeks a doe should have her own home. Handle your breeding stock gently — you wouldn't like to be carried about by the ears — and as often as you can. Get them and yourself used to it. If you are rough they may become rough too, and scratch and bite you. Be gentle with them and they will be gentle.

Take the doe to the buck. If he mounts her within five minutes, well and good; if he doesn't, remove her and bring her back to him six hours later. After she has mated carry her back to her own hutch, give her some food and let her be quiet. When she gives birth leave her alone in a nice warm nest box with plenty of hay for bedding, but inspect the litter next day and remove any dead, mis-shapen, or undersized infants — they will not do any good. After about four weeks you can wean the litter — place them in a pen of their own. Mate the doe again immediately. Never allow a buck access to his young children: he may well eat them.

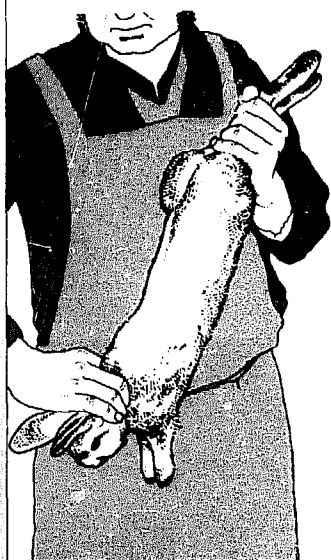
With intensive feeding, meat rabbits are ready for killing when they are ten weeks old. I prefer to feed rabbits less intensively and keep them longer than ten weeks, say for as long as four months. I let them grow slowly mostly on greenstuff and hay with a little oats and boiled potatoes. This way they are bigger and better flavored when you come to kill them. The skins are then good for curing; at ten weeks they are almost useless because all the hair comes out. Starve a rabbit, but give it plenty of water for 12 hours before killing it.

Feeding rabbits

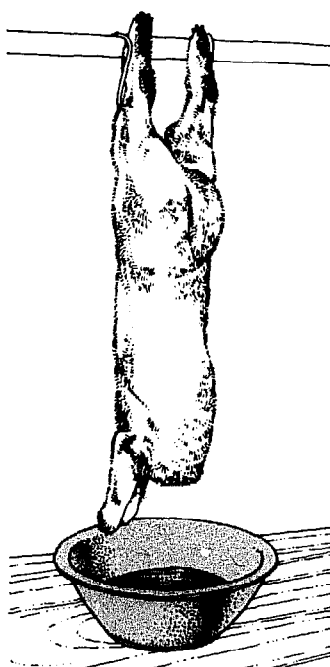
You can feed rabbits entirely on proprietary pellets and hay, but this does not come very close to meeting their natural requirements. You can feed them on nothing but greenstuff and hay, but if you do this you must provide a great deal of greenstuff of a wide variety and very good hay, and you take the risk of having small litters and small rabbits.

KILLING A RABBIT

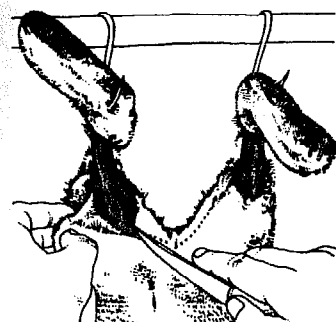
To kill a rabbit, catch the hind legs in your left hand, put your right hand over the back of its neck and pull suddenly, bending the head up and back as you do so. Death is absolutely painless and instantaneous.



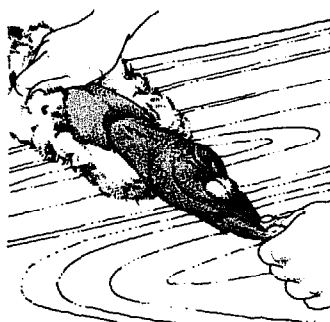
SKINNING A RABBIT



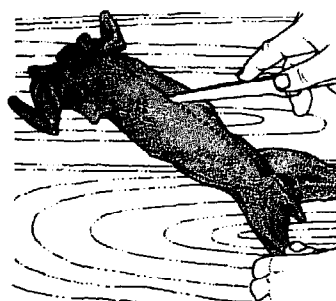
1 Hang the rabbit on two books passed through its hamstrings. Cut off its head and drain the blood into a bowl.



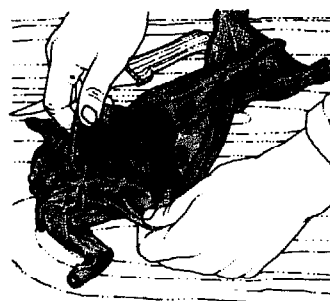
2 Slit the skin around the hocks and down the inside of the thighs to the "vent".



3 Hold the rabbit by its legs and "skin-a-rabbit" in the same way as you would pull a jumper off a child.



4 Cut off the rabbit's paws and slit it down the belly, taking great care not to puncture the innards.



5 Take out the guts, cutting off the gall bladder, the heart and the kidneys. Keep the liver, and bury the rest deep in a compost heap. Wash the rabbit thoroughly.

The best approach is to strike a happy medium and feed some grain – oats are best – mixed with hay and greenstuff, and, if you can get them, with bran whole or fragmented. Rabbits also like potato peelings, boiled potatoes, and all the root crops: turnips, mangels, parsnips, carrots, kohlrabi, radishes. Sugar beet is fine for fattening young rabbits, but not for breeding stock; it makes them too fat.

Four ounces (114 g) of pellets, or six ounces (170 g) of oats, per day with as much hay and greenstuff as they want is a good ration for adult rabbits, but this amount must be increased for a doe in kindle to eight ounces (230 g) until the young are weaned, so that she has enough milk.

These rations are all ideal quantities for ideal rabbits. I have kept rabbits on and off for many years, and never weighed anything. I give them as much concentrate – grain or pellets – as they will eat up quickly, and then I give them as much hay and greenstuff as they want. Any food they leave should be cleared up before you give them more. They don't want rotting vegetation.

As for greenstuffs: grass is very good for rabbits, but not lawn-mowings because these ferment too quickly. Greenstuff must always be fresh or else made into hay. Dried nettles are marvelous – high in protein and very good for rabbits. Nearly all garden waste is good for them: the outer leaves of cabbages and the other *brassica*; all root tops except those of potatoes which are poisonous; edible herbs; raspberry and blackberry leaves (particularly good if they get scours – diarrhea); shepherd's purse; sow thistle; dandelion, but not too much; sheep's parsley; coltsfoot; bind-weed; sorrel; daisies; clover; and vetches. Grow kale for feeding to your rabbits in late winter and spring, and they will really thrive.

Silage is good for fattening rabbits for eating, and for feeding to milking does as well. The best way to make it is to cram lawn-clippings into plastic fertilizer bags and seal these so as to exclude all air. Stack the bags upside down on top of each other so the air cannot get in. Leave them until the grass clippings have fermented. This will add to the fertility of your soil once it has been through the rabbits. Don't feed them silage alone though; give dry hay as well.

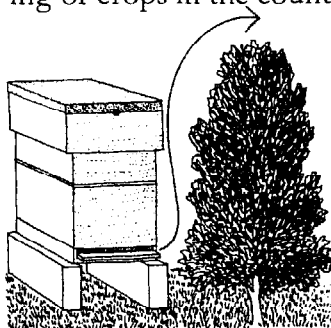
Never underestimate the appetites of your rabbits. They really need huge amounts of greenstuff, as much as they can eat. It keeps them fit and happy. Give them twigs to chew on: ash, thorn, apple and rose prunings are all good for them and keep them amused.

BEES

The wonderful thing about bees is that they make use of food that does not cost anything — food which cannot, without their aid, be used at all.

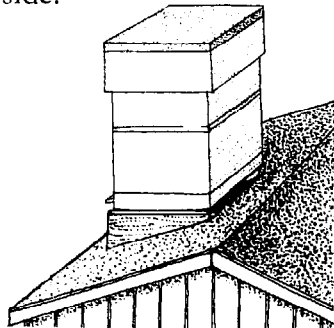
Bees in small gardens

Many people are afraid to keep bees in small gardens in urban or suburban situations because of the one thing that all worker bees have in common: their sting. However, you and your neighbors will be quite safe as long as you keep them high up. An older solution is to keep them behind a hedge, which forces them to rise before flying away from the hive so that their flight path is above the human head. This works too, but you need room in your garden not just for the hives, but for a hedge. Keeping bees in urban situations actually has an advantage: you do not risk the appalling massacres which are caused by the spraying of crops in the countryside.



HIVES BEHIND A HEDGE

If you keep your hives behind a hedge, the bees are forced to rise before flying away, so that their flight path is higher than the human head.



HIVES HIGH UP

Another safe place for hives is high up — on a platform or a roof. This uses up much less space than keeping them behind a hedge.

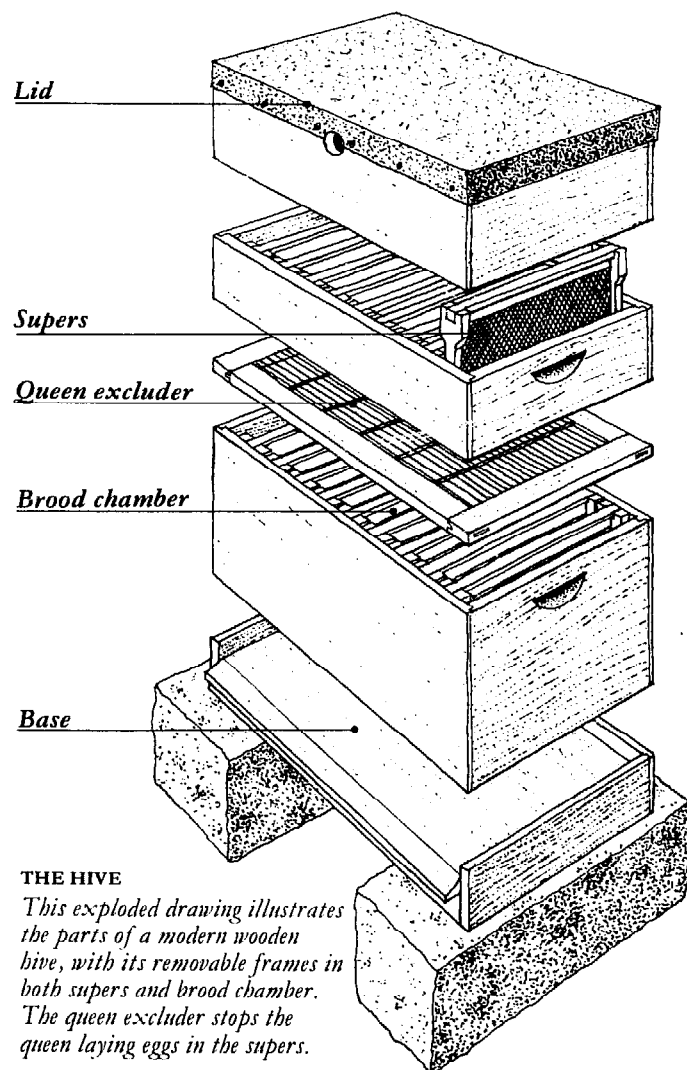
Equipment for keeping bees

Hives The modern method of keeping bees, which is quite rightly the only legal method in many countries, is to use wooden hives, which contain removable frames on which the honey is made. The frames contain wax sheets which are printed with the beautiful hexagonal pattern of bee cells. The worker bees draw out the wax to form cells in which they hope their queen will come and lay her eggs. Sadly, the beekeeper fools the worker bees. He interposes a “queen excluder” between the queen, who is down in her royal apartment called the “brood chamber”, and the frames above. The workers fill the cells above the queen excluder with honey, but the queen never lays eggs in them. Therefore the beekeeper does not kill unborn bees, when he takes the honey.

Your beehives should contain the following parts, working from the bottom upward: a base which is a flat piece of wood supported on legs, or struts; a brood chamber, which is a deep box, with no top or bottom, filled with deep frames; a queen excluder — a flat board that fits over the brood chamber with a hole in it big enough to allow worker bees through but not the queen; some supers, which are like the brood chamber only shallower, and containing shallower frames; a lid, which is a box with a top but no bottom.

Clothing As well as your hives you will need various pieces of equipment for your apiary as a whole. Most important of all is protective clothing, and every time you put it on take great care that you leave no openings through which a bee might be able to crawl.

Clearing board A clearing board is very useful. It is a flat board containing a “bee-valve”, a device which will allow bees to go down but not up.



THE HIVE

This exploded drawing illustrates the parts of a modern wooden hive, with its removable frames in both supers and brood chamber. The queen excluder stops the queen laying eggs in the supers.

You place it between the brood chamber and the supers so as to clear the bees out of the latter, when you want to take the frames out to extract the honey. You can do without a clearing board, in which case you will have to clear the bees out of the supers either by brushing them off with a soft brush, or by banging the supers on the ground. Both these techniques annoy the bees, but if you wear protective clothing you will be safe.

Smoker A smoker is a container in which you burn corrugated paper, or cloth, to stupefy your bees so that you can work them without getting them too angry. This works because when bees smell smoke they think there is a forest fire; they therefore fill themselves up with honey ready to move house. When bees are full of honey they cannot sting, but be careful not to give them too much smoke.

Extractor Once a frame is filled with honey, you can use a honey extractor to get it out. This is a

centrifuge which spins the honey out, leaving the combs more or less intact so that they can be replaced in the hive, and used by the bees again. This saves the bees a lot of work and allows them to concentrate on making honey. Before you use an extractor you must decap the combs with a hot knife. Keep the knife hot in boiling water.

Feeder If you are going to feed your bees in winter — and this will keep your bees healthy and give you more honey — you will need a feeder. This is a simple container made of plastic, wood or metal, which you can fill with sugar-water, and place above the top super just underneath the lid of the hive. The sugar-water should be two parts by weight of sugar to one part of water. Boil the mixture and let it cool. Make sure that every colony has at least 35 pounds (16 kg) of honey or sugar-water to last it the winter. Nothing less than this will keep the bees happy, strong and ready to make the best of the nectar flow next spring.

Establishing a bee colony

To start keeping bees you must either buy a colony in an existing hive, buy a nucleus, or have a swarm. A nucleus is a queen and a few hundred workers in a box. These you must carefully feed with sugar-water until they have established themselves sufficiently to survive unaided. Do not add a super to the nucleus brood chamber until all the frames in the latter are filled with honey.

To have a swarm you must first find one. Swarms are the children of bee colonies. They consist of a queen and several thousand workers. Their habit is to hang on a tree branch, like a huge football of bees, and stay there while they send out scouts to find a suitable home. When the scouts return the whole swarm flies away and enters the new home. If you are lucky enough to find a swarm, have it by shaking the branch hard, or cutting it off, so that the whole mass of bees falls into a box. Turn the box upside down and leave it until evening, with a stick under it to leave a gap through which the scouts can return to the swarm. Then carry the box to your empty hive. Lay a white sheet on the ground in front of the door to the hive, and shake the swarm out on to the sheet. As bees always tend to crawl upward, they will crawl into the new hive.

A final few words of advice: before you embark on beekeeping join your local beekeeping society or group, or at least make friends with an experienced beekeeper. Buy, or borrow, a good book on the subject; there is much more to know about bees than I have managed to fit in here.

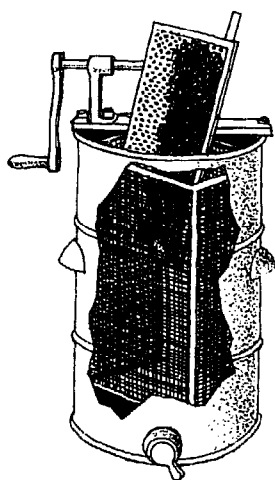
APPROACHING THE HIVE

Protective clothing is a vital part of beekeeping. Protect your hands and wrists with gloves and your face with a special bee-veil. Wear light-colored clothing, with your trousers tucked into your socks. Use a hive tool or a screwdriver to lever open the hive, from the side or rear if possible. Have a smoker ready-lit, filled with corrugated paper, rags, or any material that will make smoke. The smoke will stupefy the bees; they will fill themselves up with honey, and be unable to sting.



BEEKEEPING TOOLS

You can use a special hive tool to lever open the different parts of the hive, left. Before using an extractor to obtain the honey, you must decap the combs with a hot knife, right.



HONEY EXTRACTOR

This device acts as a centrifuge for spinning out honey, leaving the combs intact and re-usable.

DRAINAGE

Wet land is, for nearly all land plants, bad land. The plants grow up late in the spring, grow slowly and badly, and fungus diseases flourish. And wet land is sour and acid. You just have to drain it.

The water table

When water falls on to pervious ground it sinks in and goes on sinking until it hits an impervious layer. If this layer is sloping, the water may continue downhill underground until it outcrops — that is, comes to the surface somewhere. If it outcrops in your garden you will have a spring, and a very wet garden indeed. If the country is low-lying anyway the water will not outcrop, but just stay where it is. The level to which water rises underground is called the water table. If it is only a few inches or even feet below the surface of the soil you have a drainage problem. If it coincides with the surface you have a swamp. If it is above it you have a lake.

You also have a drainage problem if the surface of your soil is heavy clay because no water will percolate through it, either up or down. If your soil is sand or gravel, water will percolate easily, but if there is clay underneath, water can accumulate in the sand or gravel and you still have a drainage problem.

Ditches and land drains

You can lower your water table a certain amount by digging ditches around the edges of your land. If the problem is more acute, you can dig land drains, and these can go across the middle of your land — a herring bone pattern is ideal. Dig trenches and lay perforated pipes or open jointed drains in the bottom. Cover over with gravel or other coarse material, and cover this with soil. Dig the trenches so that they lead the water to a stream or other watercourse that will take it away to the sea.

Drywells

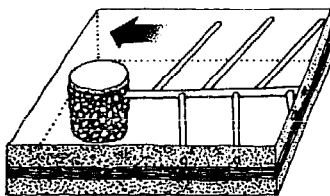
Your garden may be wet because you have a heavy clay topsoil above a pervious subsoil. If so you may well be able to cure the problem by digging a drywell. Dig a pit in the lowest part of your garden; dig through the topsoil and well into the pervious subsoil. Fill the pit with big stones and dig land drains leading to the pit.

A drywell can also be used to deal with damp soil caused by an impervious layer below the topsoil. Simply dig through the impervious layer when digging your drywell. Lay land drains through the pervious topsoil, so that they catch water before it reaches the impervious layer.

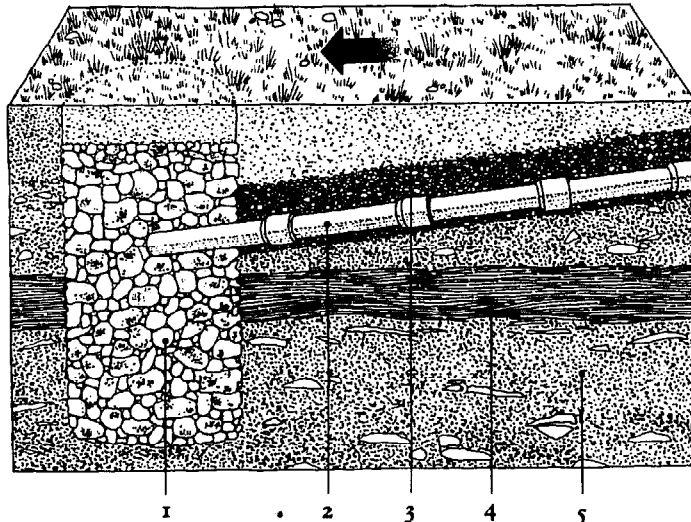
If you can't dig through the impervious layer, or you can't lower the water table by any of the

LAND DRAINS AND DRYWELL

If your garden has a heavy clay topsoil on top of a pervious subsoil, you should be able to drain it by installing a drywell. This is a hole dug deep enough — say four feet (1.2 m) — to carry the water down to the subsoil. Fill the pit with porous material such as gravel or broken bricks. Dig land drains running down to the drywell at a gentle slope. Because the ground is porous at the bottom of the drywell, the water will drain away. In a large garden dig land drains in a herring bone pattern — that is to say with branch drains running



into the main drain leading to the drywell.



THE DRYWELL PIT

The cross-section above shows the drywell 1, with land drains 2 running down to it. The drains are packed with small stones 3. The layer of impervious material 4 is bypassed by the drywell, so the water can reach the porous layer 5.

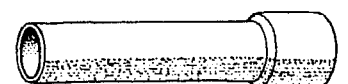
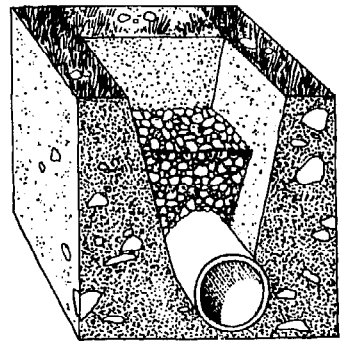


PERFORATED PIPES

This type of pipe is plastic and comes in long lengths; the perforations allow water to enter the drain all along the line.

DRAIN CROSS-SECTION

When you lay a drain, cover it with small stones or gravel before you replace the soil.



OPEN JOINTED PIPES

These are short pipes laid end to end; they are not cemented together, so water can seep through the joints and flow down to the drywell.

methods outlined above, you may find that you need a drain not just across your own garden, but across one, or even several, of your neighbors' gardens. Such a ditch will benefit everyone, so it is worth getting together with your neighbors and digging it as a joint effort.

TERRACES

The terracing of steep hillsides has gone on since antiquity, and in many parts of the world it is the only way of farming or gardening on a permanent basis. Cultivation of unterraced hillsides inevitably leads to soil erosion and eventually a complete loss of soil cover. A properly terraced hillside will last for ever.

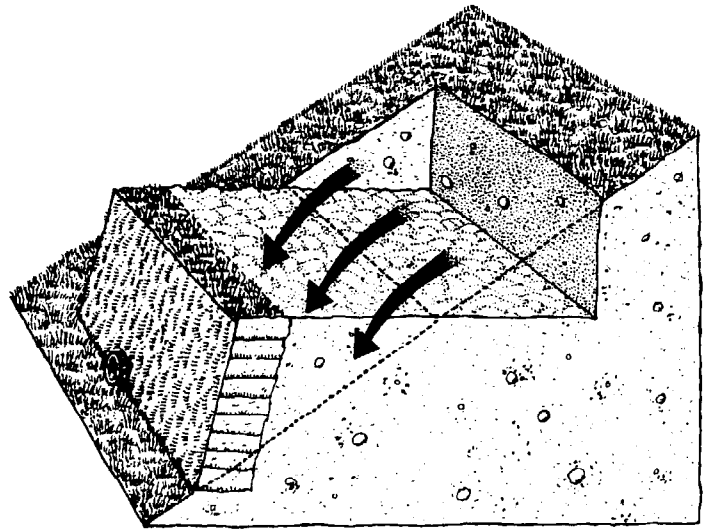
If you have a steep unproductive slope, it is well worth terracing it. If you acquire land with terraces on it, it is likely to be very productive land. This may be to do with the fact that the initial labor involved in terracing is very high, the cost of terraced land is therefore correspondingly high, and so terraced land is cherished and lovingly cared for.

Constructing a terrace

Your retaining walls can be of stone, brick, concrete blocks or, on not too steep a slope, turf. Masonry retaining walls — and remember they have to be very high — are too expensive nowadays for most people to contemplate. However, you can build turf terrace walls at minimum expense, but at a high cost of labor.

Mark out the width of the proposed terrace and dig a level foundation for the retaining wall at the base of it right along that contour. Peel the turf off the side of the hill to the width of the intended bed. Use the strips of turf to build a wall on your level foundation and give the wall a slight batter in toward the terrace. The wall needs to be half as high as the vertical height of the stretch of slope you are terracing. Level the terrace by throwing the soil from the uphill half of the proposed terrace down to the downhill half which stretches to your wall. The turf which forms the wall will put out fresh grass on its exposed vertical side and take on a new lease of life. It will stand up as well as a stone wall.

Whatever material you use for your walls you must arrange some drainage. Water building up behind a wall can burst it. Below the topsoil, close to the terrace wall, you should build up some permeable material — stones or pebbles. Insert short drain pipes through the wall and into this permeable fill at intervals of about ten yards.



BUILDING A TERRACE

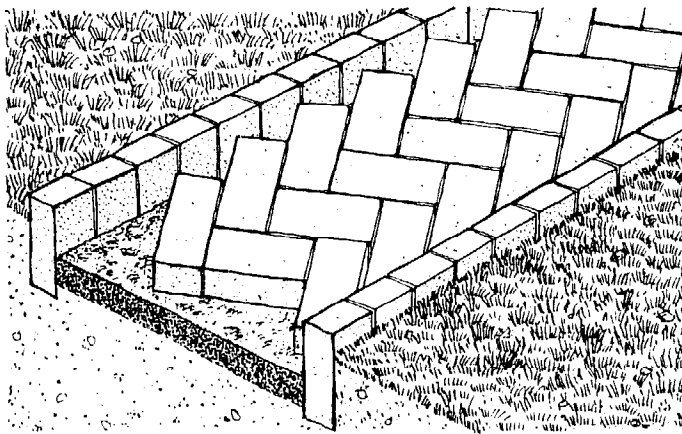
Mark out the width of the proposed terrace, and peel off the turf from the side of the hill to this width. Dig a level foundation at the base of the terrace, and build a retaining wall on top of it with the turf. Give the wall a slight batter in towards the terrace. Build in some porous material close to the wall; then insert short drain pipes through the wall and into this porous fill. Finish by moving the soil from the top half of the terrace to the bottom half. The turf in the wall will put out fresh grass on its exposed side.

GARDEN PATHS

A good paved path running down the backbone of your garden is a great boon. The main highway of a vegetable garden gets too much traffic for a grass path to cope with. An earth path becomes mud, except on very light sandy soil, and pushing a wheelbarrow is much easier on a paved surface. Now that I am going over to deep bed gardening (see p. 106), I am making stone paths between each five foot (1.5 m) wide deep bed by simply throwing all the stones and pebbles that I dig up on to the narrow strips between the beds. I strongly recommend this practice: with a paved path running down the middle of a small garden and deep beds running off at right angles with stone paths between them, it is never necessary to get your shoes dirty at all! This makes quite a difference to the state of your carpets.

Types of path

There are various ways of making a paved path. Concrete is permanent, but is very ugly. And after all you garden for pleasure as well as for food, and therefore aesthetics should be given a fairly high priority. A brick path, possibly with a zig-zag pattern of bricks, is very attractive, and if well made, will last a lifetime. But if it is made badly it will fall to pieces in no time. Crazy paving is fine



MAKING PATHS

Bricks are laid in a herring bone pattern in the path, above, and held in place by a vertical line of bricks on each side. For a concrete path, below, the edge of a plank should be used to level the mixture to the correct height.



if you like it: personally I think the end result is not worth all the trouble of intricately fitting it together. But flat stone slabs laid properly can be excellent, or a mixture of flagstones and bricks is serviceable and attractive. You can use old bricks and you don't even have to clean them. Gravel, granite chips, or other small loose pebbles are fairly good: perfectly all right if you have a wheelbarrow with a pneumatic tire, but laborious if your wheelbarrow has a bare steel rim; the good old wide wooden wheel, with an iron tire on it, goes quite sweetly over gravel.

Laying a path

Gravel Dig a trench about four inches (10 cm) deep, and to the width you want the path. Fill with plenty of gravel. Never skimp the gravel: use a lot or it will get trodden away to nothing.

Bricks and slabs Dig a trench six inches (15 cm) deep and put four inches (10 cm) of sand in it. Flatten the sand with a plank to make it level and firm. Lay your bricks to a herring bone pattern on the sand. Hit them with a mallet to make the surface level, being careful not to chip off corners. Sprinkle sand over the bricks and sweep over the

surface so the sand falls into the cracks. Hose the path down so that the sand binds together.

The edges are a problem for they can break away. One method of preventing this is to lay a line of bricks along each edge sloping down away from the path and embedded quite deeply in the soil at the side. Bricks set vertically in the soil will fulfill the same purpose.

A flagstone path can be set in place using the same method. The edges will not be a problem because the slabs are so large.

Concrete If your soil is soft and muddy, you will have to dig quite a deep trench – say a foot (30 cm) deep – and fill this to within four inches (10 cm) of the surface with gravel. If your soil is hard and well drained, you need only dig a trench about four inches (10 cm) deep. Now lay planks on their edges for forms along each side of the path. Keep the planks securely in position by driving pegs into the soil beside your trench.

Your concrete should be a mixture of one part of cement, two parts of sand, and four parts of small aggregate. If you can borrow or hire a cement mixer to do the mixing, do so for it will save you an awful lot of sweat. If you can't do this mix your concrete this way: make a pyramidal pile of your aggregate on a hard surface such as concrete. Throw your sand over this pile so that it covers the pile evenly. Then throw on your cement in the same way. Now start shoveling from one side, sliding your shovel in along the floor, and build, shovelful by shovelful, another conical heap nearby. When you have completed this heap repeat the process putting the material back where it was before.

Move it a third time, and then make a hole in the top of your cone like the crater in the top of a volcano. Throw water with a dash of emulsifier in it – if you can't get emulsifier, use detergent – into the hole. Now work your shovel about in the hole so as to blend the dry mix with the water. Beware a break in the circular wall at the bottom of the pile, or you will lose water, cement, and all. When you have mixed as much as you can, quickly shovel the outside of the heap into the middle. Slice it repeatedly with your shovel and sprinkle on more water as you need it. You don't want the mixture too sloppy: just make it all thoroughly wet.

Shovel the mixture into your trench. Level to the height of the retaining planks, and firm the top by pressing down with the edge of a plank. This should leave a pattern of small furrows and ridges which makes for a non-slip surface. If you

can give the surface a slight camber this is an advantage for the path will shed water.

You may well find it easier to make a long path in sections, say ten feet (3 m) long. If your path is more than 40 feet (12 m) long, unbroken, put in expansion joints roughly every 30 feet (9 m). These can be thin planks standing up on edge. Just leave the planks there after the concrete has set. They allow for expansion of the concrete; otherwise it might crack in hot weather. After you have made your path keep the concrete wet for three days. Hose it occasionally or cover it with wet sacks. Do not let the frost get at it.

HEDGES AND FENCES

Good fences make good neighbors and bad fences make the other kind. Certainly no-one should put up a boundary fence, or wall or hedge, without consulting his neighbor, and it is far better to compromise if there is a disagreement. You will be far happier with the wrong sort of fence and a friend on the other side of it, than with the fence you wanted and a mortal enemy.

Hedges and fences each have advantages over the other. Hedges look nice, and they are alive and therefore foster other living things, like small animals, birds, moths and butterflies. They add to the biological richness of your garden, and they can be productive. Consider the merits of a crab apple, or a hazel, hedge for example.

However, hedges sterilize a lot of ground: that is to say they shade a wide stretch, but more drastically their roots spread out and draw all the moisture and nourishment out of a wide area. In a big garden this may not matter, but in a small one it does. Hedges can also harbor weeds and harmful insects. Personally I would not grumble about this, because they harbor useful insects – predators – as well, and to an organic gardener anything that increases the richness of life in his garden is to be encouraged. And it is easy enough to stop weeds from seeding in the soil below a hedge. Creeping perennial weeds like couch grass are a problem though, and in a small garden they represent a very strong argument against planting a hedge at all.

Fences and walls take up far less ground than hedges and do not send out roots to deprive the garden soil. Nor do they harbor insects and weeds. A major advantage is that they are quickly established: an instant solution. Most important of all though, is that they can be used for training cordon, espalier or fan-trained fruit trees or any food-bearing climbers, such as pole beans, toma-

toes, cucumbers, squashes or melons. This to my mind gives them a very big advantage over hedges. There are not many plants that make a good hedge and at the same time provide food, while a fence or wall will support a great deal of food-bearing life, and you can therefore increase the effective area of your garden by the area of the side of the fence. You cannot do this with a hedge.

However, bear in mind that fences can look ugly, though of course they needn't. Choose one which appeals to you visually – as long as it is strong – use it to support fruit and vegetables, and you will have a beautiful fence. Also remember that fences are generally more expensive than hedges, especially if you gather the material for planting a hedge yourself. And fences don't last as long as hedges. Indeed there are many hedges which are known to be hundreds of years old. Walls are, of course, more expensive than hedges, but they do last.

Building a hedge

For my hedges I always plump for some simple indigenous plant like hawthorn or beech, which is attractive and keeps its brown leaves all winter. I lay, or plash, my hedges every three or four years so as to keep them dense and prevent them from opening out at the bottom. Plashing is the art of cutting almost through the upper stems of the hedge, laying them over at a slight angle to the horizontal without breaking them off, and weaving them together.

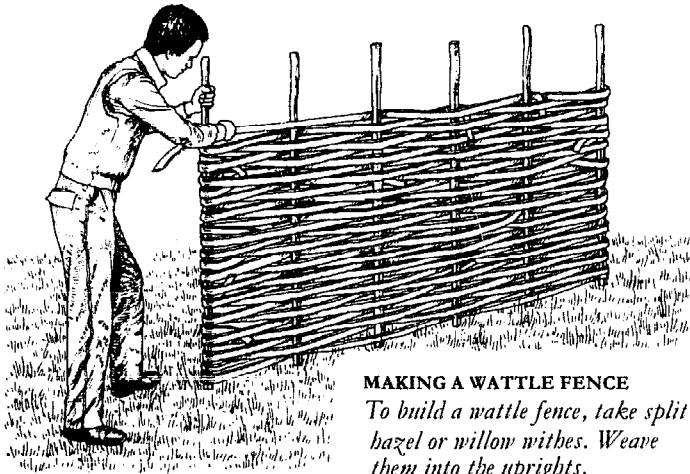
The many varieties of trees and bushes normally used for garden hedges, like privet and box, can be trained by clipping with shears. Personally, I could live quite happily without ever seeing another privet hedge, and would only grow box for proper trees; they produce marvelous hard timber which is suitable for making carvings, and for "priests", the small clubs which are so useful for administering the last rites to unlawfully caught fish.

Building a fence

Most gardeners have the fencing they inherited with their gardens. When you have to put up your own fences there are many considerations. The first is probably cheapness. In most parts of America wood is fairly cheap and is probably the best material. In much of Europe the price of wood is prohibitive. It is as cheap, and certainly more permanent, to use brick. Plain brick walls, such as surround many a city garden, can mellow and look attractive, and will last for centuries.

They can be claustrophobic, but they have the advantages of halting the progress of rabbits and storing the heat of the sun. Whatever you use, consider the fence as part of the garden, for growing things on, rather than merely a boundary marker.

If you want wire fences, the sunny side of your garden is an ideal place to have them. You can train sun-loving plants up them and get the benefit of your neighbor's sunshine as well as your own. A fence intended to break the force of the wind should not be solid. A solid fence causes strong and damaging wind eddies in its lee. A fence through which a little of the wind can percolate — what engineers call spoiling eddies — is a much better wind-break.



MAKING A WATTLE FENCE
To build a wattle fence, take split hazel or willow withes. Weave them into the uprights.

A wattle fence which you can build yourself is ideal for this purpose. A solid wall, particularly if it is painted black, on the north side of a garden, will warm in the sun and force on any tender trees which you train up it.

GARDEN SHEDS

A tiny garden shed that will just hold your tools is better than nothing, but if you can afford the money and space, or the labor and space, a good big shed that you can use as a potting shed, and which has room for a workbench for mending tools is very much better. And, if the shed is big enough to store potatoes, roots, seed, dried beans and even strings of onions, better still. I know a man who keeps two sixty gallon cider casks in his tool shed: one for parsnip wine and one for rhubarb wine. He is a wise and happy man.

Interior layout

My own belief about the insides of sheds is that anything that can be hung up should be hung up. That way you can find it when you want it, and it

doesn't get forgotten in some damp corner where it will go rusty or rot. Personally, I like to paint the outline of every tool on the wall where it is hung. Then I know if the tool is out of place and I go and look for it.

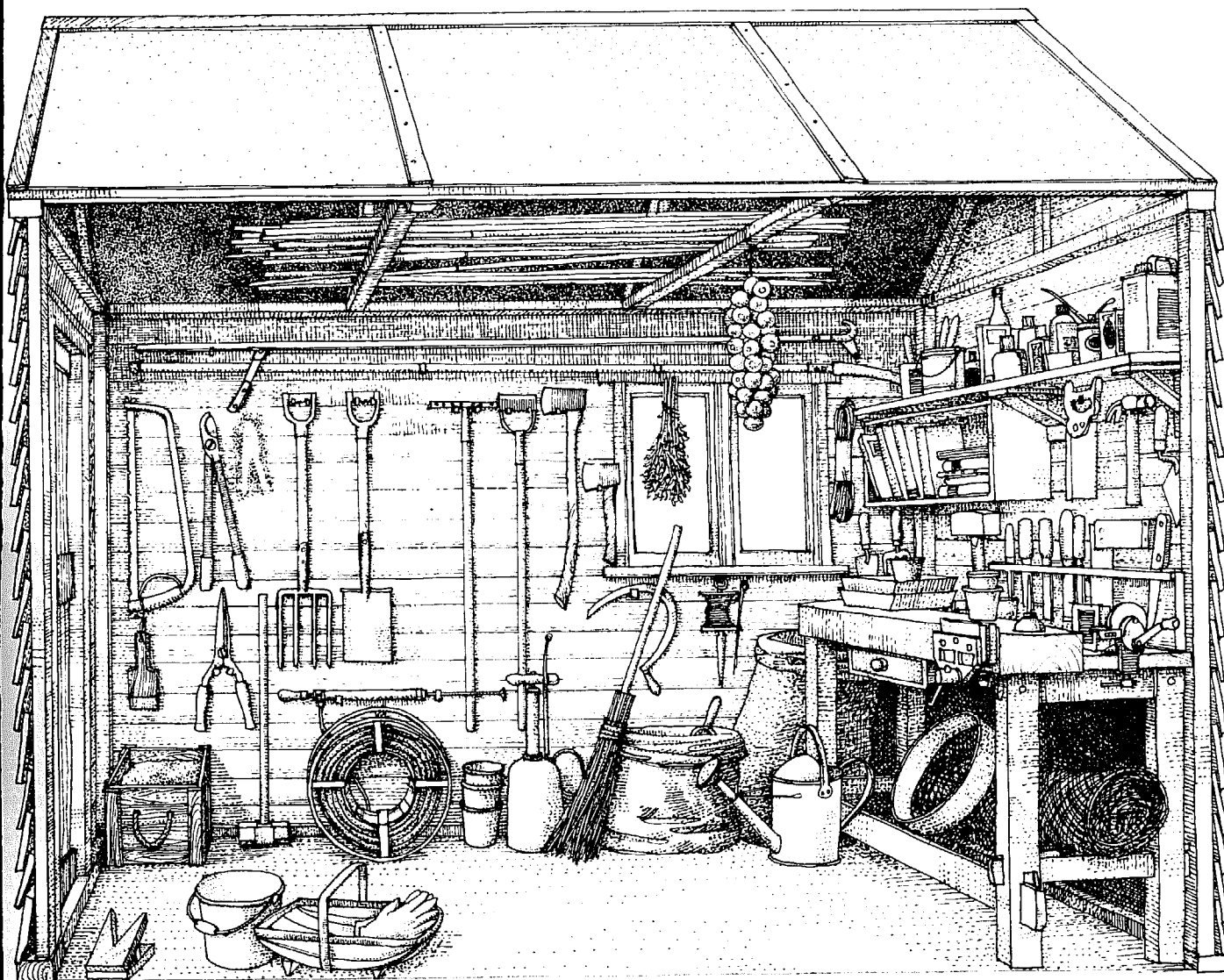
Inside and to one side of the door, out of any rain that may drive in, you should keep your sand-box (see p. 246). It takes only a second to jab your spade, fork, hoe or whatever into this as you bring it in, and if you always do this, you will always have clean, shiny, well-oiled tools. A "man" (see p. 246) should be hung on a string, also near the door. You can use this to scrape the worst mud off your tools before you bring them in. I think it is also a good idea to have a boot-jack on the floor for pulling off your boots. You then leave them in their appointed place in the shed and put on your indoor shoes before going into the house. Calico bags of beans and other large seeds should be hung up overhead. Paper seed packets should be put in a drawer. Herbs and vegetables can be hung up to dry. A small bookshelf for books like this one and for seed catalogs is a good idea.

Building a shed

Before you decide to buy an expensive factory-built shed consider making one yourself out of scrap material. A well-built shed, of second-hand wooden framing and weatherboarding, creosoted inside and well tarred outside, looks extremely good. The roof can be of planking with asphalt roll roofing over it. A roll of such material costs a lot less than new corrugated iron. It is extremely durable and simple to lay.

Another method of roofing which I find works very well is to begin by laying on a covering of corrugated scrap iron with holes drilled in it. Above this lay on plastic fertilizer bags overlapping like tiles so that they shed any water that comes from above. Cover this with another layer of corrugated scrap iron and nail right through. Paint the top layer with asphalt. This form of roof is well insulated, quite weatherproof, and very long lasting, though I cannot claim that it is a delight to the eye.

The most important thing with all wooden buildings is that they should have dry feet. No lumber should be set in the ground. It is a good idea to build the shed on piers of brick or concrete, and put in some form of damp coursing between the masonry and the wood. The very best thing to do is to lay a concrete floor below the shed and build on this.



Insulating a shed

It is a good idea to have your shed insulated. If you wish to store potatoes or other crops in the shed in very cold climates this is essential. Glass fiber insulation, like that used in attics and around hot water tanks is ideal. A method that should cost nothing is to use plastic fertilizer bags to build a false ceiling and false walls inside the shed. This creates a cavity of air between the outer walls and the plastic layer; as long as there are no gaps in the plastic, insulation of this kind can be very effective.

CARING FOR GARDEN TOOLS

Tools, like shoes, are paradoxically expensive if they are cheap. A cheap pair of shoes will last a hard working gardener a year; I have an expensive pair which is just wearing out after fifteen years. The very same principle applies to tools, and my

EQUIPPING A GARDEN SHED

This shed is made of framing and weatherboarding; it is creosoted inside and tarred outside, with a roof made of asphalt roofing. The floor is concrete, so that the wood has no chance of getting damp. Inside the shed all the items are arranged for greatest convenience. The tools are hung up on the wall, each one with its outline in whitewash, to make its absence conspicuous. A sandbox and a "man", along with a bootjack, are placed near the door, so that tools can be cleaned and muddy boots removed first thing upon entering the shed. Books, netting, animal feed and fruit canes are among the many and various things that can be kept in the shed.

advice is that, as long as you can afford them, you buy good quality, well made tools. Examine the joint between the handle and the metal working part. Are the two held together with one or two rivets, or is there a well-crafted snugly fitting join?

Replacing handles

The handles on good tools wear out faster than the tools themselves. But you can increase the life

of wooden handles enormously by doing two things: oiling them with boiled linseed oil once a year, and keeping them indoors out of the rain.

Handles are notoriously expensive nowadays, but remember that every time a farmer lays a hedge he cuts out and burns scores of good potential handles. It pays, on visits to the country, to keep a look-out for lengths of clean, straight-grained, ash (or curved ash for particular jobs). Bring them home, hang them up in the tool shed to season, and then shape them to fit into your tools as handles.

Sharpening tools

Tools that are meant to be sharp should be kept sharp. Hoes particularly should have an edge: not a razor-sharp one that will crumple on hitting the first stone, of course, but a slightly rounded obtuse-angled edge. Spades, too, although the best ones are made to be pretty well self-sharpening, should be kept fairly sharp.

This does not mean that you should grind away at your hoes and spades until they are all worn to stumps, but that, when you find an edge badly worn away, you should use a file. A file is better for such tools than a grindstone.

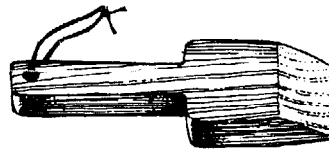
All cutting tools like axes, hatchets, and pruning knives, should be kept keen at all costs. It is a complete waste of time to work with blunt tools. Cutting tools can be sharpened on a grindstone, with a hand stone, also known as a "whetstone", whether of carborundum or millstone grit, or with a file. If you use a circular grindstone be sure to keep it wet, otherwise the heat generated may take the temper out of the steel at the very edge of your blade. Be very wary of using a carborundum wheel too much on any one tool at one time. They can easily take the temper out of an edge.

Before sharpening any blade examine the shape of the edge carefully so that you know how to sharpen it. Always keep very strictly to the original angle of the edge of the blade. The blade must always be ground right down again to bring its cutting edge to the original angle.

Some blades, like those of axes and some knives are ground away on both sides so as to leave a symmetrical section. Sharpen both sides of these. Other blades like those of chisels, 'draw-knives, planes, and some pruning knives, are ground only on one side, so as to leave an asymmetrical section. With these do all your grinding and whetting on one side, and then simply pass the other side, laid quite flat, a few times over the grinding device, just to take off the burr.

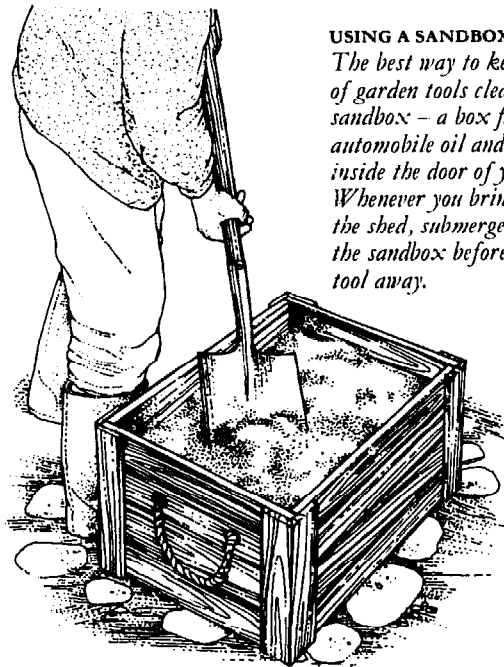
USING A MAN

You can use a man to clean the worst of the mud off your garden tools. You can make a man yourself by sawing a piece of hard wood so that it has a handle and a wedge-shaped blade. Keep it on a string by the door of your tool shed.



Looking after tools

Man A man is a wedge-shaped piece of hard wood with a sharpened edge. Hang it on a piece of string by the door of your tool shed and use it to scrape the mud off your spades, forks, shovels, hoes and everything else before you take them into your shed and plunge them into the sandbox.



USING A SANDBOX

The best way to keep the blades of garden tools clean is to keep a sandbox - a box filled with old automobile oil and sand - just inside the door of your tool shed. Whenever you bring a tool into the shed, submerge the blade in the sandbox before putting the tool away.

Sandbox There is one terribly simple method of doubling the life, and effectiveness, of steel tools and that is to have a sandbox. Find a box deep enough to hold the blade of your biggest spade. Fill it with a mixture of sand and used oil, which you can get free when you, or someone else, drains your car. Every time you come in from working with any steel tool just plunge the blade into the sandbox. This both cleans and oils the blade. If you keep your sandbox out of the rain, it will last for many years without needing a change of contents.

SEED LIVES AND VEGETABLE YIELDS

	Percentage germination in years			Average yield per 10 ft. row
	Up to 100%	75%+	50%+	
Asparagus	2	3-4	4-5	10 lbs (4.5 kg)
Beans broad	2	4	6	8 lbs (3.6 kg)
bush	2	3	—	8 lbs (3.6 kg)
lima	1	3	—	2.5 lbs (1.2 kg)
pole	2	3	5	17-30 lbs (8-14 kg)
soybean	1	2	6	1.5 lbs (0.7 kg)
Beets	3	6	10	15 lbs (6.8 kg)
Broccoli	3	4	6	12 lbs (5.4 kg)
Brussels sprouts	2	4	5-6	11 lbs (5 kg)
Cabbage spring	3	5	10	5-8 heads
summer	3	5	10	5-8 heads
winter	3	5	10	5-8 heads
Chinese	3	5	7	10 heads
Carrots	2	3	5	8 lbs (3.6 kg)
Cauliflowers	3	4	5	5-8 heads
Celeriac	3	4	5-6	12-20 lbs (5.4-9 kg)
Celery	3	4	5-6	12-14 lbs (5.4-6.4 kg)
Chicory	3	4	5-6	20 heads or 40 roots
Cress and upland cress	3	5	9	Lots
Cucumbers	1	4	6	50 cucumbers
Dandelions	1	2	5	Lots
Eggplants	4	5	—	20 lbs (9 kg)
Endive	5-6	7-8	10	10-12 plants
Florence fennel	3	4	7	20 bulbs
Hamburg parsley	1	2	4	10-15 lbs (4.5-6.8 kg)
Kale	3-4	4-5	6-7	12 lbs (5.4 kg)
Kohlrabi	3	4-5	6-7	12 lbs (5.4 kg)
Leeks	1.	2	3-4	20-30 leeks
Lettuce	3	4	6	15 lettuces
Melons	1	2	4	12-16 melons
Okra	4	5	—	16-20 pods
Onions	2	2	4	8-10 lbs (3.6-4.5 kg)
Parsnips	1	1-2	4	15-20 lbs (6.8-9 kg)
Peanuts	1	—	—	2-5 lbs unshelled (0.9-2.3 kg)
Peas	3	4	9	20 lbs (9 kg) pods
Peppers	2	2-4	7-8	7.5-10 lbs (3.4-4.5 kg)
Potatoes	Plant seed potatoes			25 lbs (11.3 kg)
Radishes	4	5	—	Lots
Rhubarb	Plant crowns			30-60 stalks
Rutabagas and turnips	2	2-3	5-6	8-14 lbs (3.6-6.4 kg)
Salsify	1	1-2	3	6 lbs (2.7 kg)
Seakale	1	1-2	3	8-12 lbs (3.6-5.4 kg)
Spinach	2	3-4	5-6	8-10 lbs (3.6-4.5 kg)
Spinach beet	1	2-4	5-6	10-15 lbs (4.5-6.8 kg)
Squashes	4	6	—	8-15 marrows
Sweet corn	1	2	3	30-50 cobs
Swiss chard	2	6	10	8 lbs (3.6 kg)
Tomatoes	3	6	10	20 lbs (9 kg)
Watercress	2	5	9	Lots
Watermelons	3	6	10	5-10 melons

FOR MORE HELP

Information about Organic Gardening

International Federation of Organic Agriculture Movements (IFOAM), Box 900, Emmaus, Pa. 18049

Information about Vegetables and Fruits

For specific information about growing vegetables and fruits, as well as advice about soils and pest problems in your local area, consult your County Extension Agent. You can find the address of your nearest agent in the phone directory under the county-government heading.

The U.S. Department of Agriculture also offers excellent publications on a variety of gardening subjects. For a list of their available publications (\$.45) write: U.S. Department of Agriculture, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Information about Deep Bed Gardening

Covelo Garden Project, Covelo, Round Valley, Ca. 95428

Information about Poultry

Willow Hill Hatchery, Department B, Richland, Pa. 19355 (for chicks, goslings and ducklings)
Stromberg Chicks, Pine River 4, Minnesota 56474

Information about Beekeeping Equipment

Midwestern Hive Co., 1527 East 26th Street, Minneapolis, Minn. 55404
Sunstream Bee Supply, Box 225, Eighty Four, Pa. 15330 (for bees, as well as all types of equipment)

Information about Winemaking Equipment

Continental Products, 5319 West 86th St., Indianapolis, Indiana 47268
Wine Hobby USA, Box 1866-E, Allentown, Pa. 18105
Valport Industries, 1438 North West 23rd St., Portland, Ore. 97210.

CLIMATE ZONES

If you grow only the crops that grow indigenously in your climate zone, you will not suffer many losses due to climate, nor will you have to protect your plants from the weather. But of course gardeners don't do this. Quite rightly they like a varied diet so they push their luck, and try to grow the more succulent and tasty crops farther north or south than the plants really want to grow. This is why an understanding of climate is important to the gardener. It tells him when to plant, when to harvest and, perhaps most important, when to protect his plants artificially.

Cities are always warmer than the open countryside. The waste heat from houses and all those people contribute toward this. So, if you live in a city or its suburbs, you can plant a little earlier, and enjoy a longer growing season than the gardeners in the countryside nearby.

Frost

The period which elapses between the last freeze of the spring and the first freeze of the fall is a crucial time for vegetable gardeners. If you want to grow outdoors those plants which are tender –

and they include all the crops which are indigenous to warm climates: tomatoes, cucumbers, peppers, squashes – you can grow them outside only during this period. Except for root crops and *brassica*, all your vegetables should be harvested before the first fall frost.

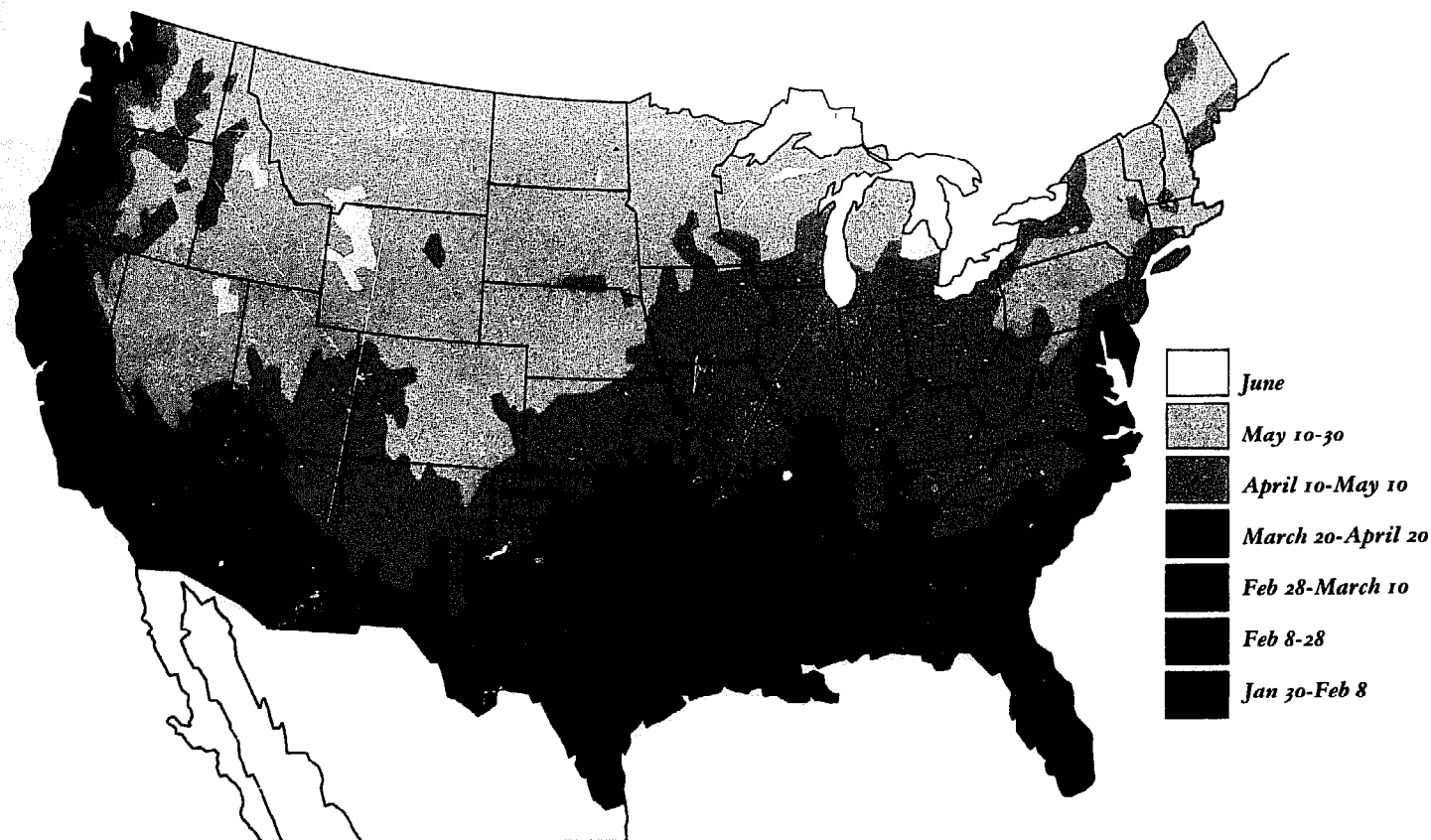
The growing period of food plants can be measured against the growing period of grass. When the grass in your lawn starts to grow, after the dormant winter period, you can start putting in seed. Grass begins to grow when the soil temperature reaches 43°F (6°C) in the spring. When the soil temperature falls below that temperature in the fall, grass stops growing.

There are certain factors that affect the dates of the first and last freezes. Proximity to the sea, or any deep water, tends to warm air and prevent frost, while altitude generally increases the cold.

Rainfall

Lucky is the gardener whose land gets just the right amount of water naturally from rainfall. Too much winter rain washes the nutrients out of the soil, erodes the soil itself and prevents the gardener from getting out on to the land as early as he would like. Planting green manure crops on

Last expected frost date



vacant vegetable beds in winter prevents erosion and keeps the nutrients in the soil.

The garden needs rain in the spring and early summer and not too much rain in midsummer. Most of us have to give nature a hand and either dig irrigation furrows or get out the hose or watering can.

Sunshine

Some sunshine is important for all food-producing plants except mushrooms. Crops like sweet corn, eggplants, peppers, melons, tomatoes, cucumbers, peaches and grapes will not ripen without plenty of sun. In areas which get little sun you can, of course, grow these crops under glass or plastic and, if necessary, provide artificial heat. On the other hand some crops cannot take too much sun, lettuce plants go to seed and die when summer heat sets in.

Wind

Many plants suffer badly in windy positions. As well as the strength of the wind itself there is the problem that wind exaggerates the effect of frost. In an area of high winds, try to utilize sheltered spots, or build windbreaks.

The USDA Regions

CLIMATE REGIONS

Region 1 Cool, dry summers with frequent fogs. Heavy winter rainfall.

Region 2 Summers drier and warmer than Region 1. Average low temperatures 10° to 20° F.

Region 3 Hot, dry summers. Mild winters with 8 to 10 inches of rain. Low temperatures: 22° to 24° F.

Region 4 A very mountainous region. Conditions vary greatly according to elevation.

Region 5 Summers on the coast dry and cool, but warmer inland. 11 inches of rainfall in the valleys, 30 inches in mountains.

Region 6 Summers warm. Winter temperatures average 10° to 15° F. Most rain in winter and spring.

Region 7 Summers warm. Winter temperatures range from 0° to 15° F. Rainfall: 10 to 20 inches.

Region 8 Semi-arid - hot summers and cold winters with temperatures between 0° and -10° F.

Region 9 Cold winters. Hot summer days with frosty nights.

Region 10 Scorching hot with a rainfall of 3 to 10 inches.

Region 11 Same as Region 9, but hotter.

Region 12 Elevation and exposure variations mean big differences in rainfall and temperature.

Region 13 Similar to Region 12, but temperatures at same elevations 7° F hotter on average.

Region 14 Similar to Regions 12 and 13 but warmer.

Region 15 Moderately warm summers, but extremely cold winters.

Region 16 Dry farming area, warmer than Region 15. Rainfall 12 to 22 inches.

Region 17 Dry and hot with 12 to 22 inches of rainfall but excessive evaporation.

Region 18 Fairly humid with cold, dry winters.

Region 19 Sudden variations in winter temperature. Hot winds in summer.

Region 20 Transition between dry farming regions to the west and humid climate of eastern Texas.

Region 21 Cold winters with drying winds. The 20 to 30 inches of rain comes mostly in summer.

Region 22 Prairie country with cold drying winter winds. Rainfall: 30 to 40 inches.

Region 23 East warmer and more humid than west, which is similar to Region 21.

Region 24 Moisture-laden atmosphere, 30 to 40 inches of rainfall spread over the year.

Region 25 Warm summer with risk of drought. Moderate winter. Rainfall: 40 to 50 inches.

Region 26 Long days and cool nights in summer. Heavy snowfalls in winter.

Region 27 Abundant rain - 35 to 50 inches - throughout the year. Heavy snow in colder areas.

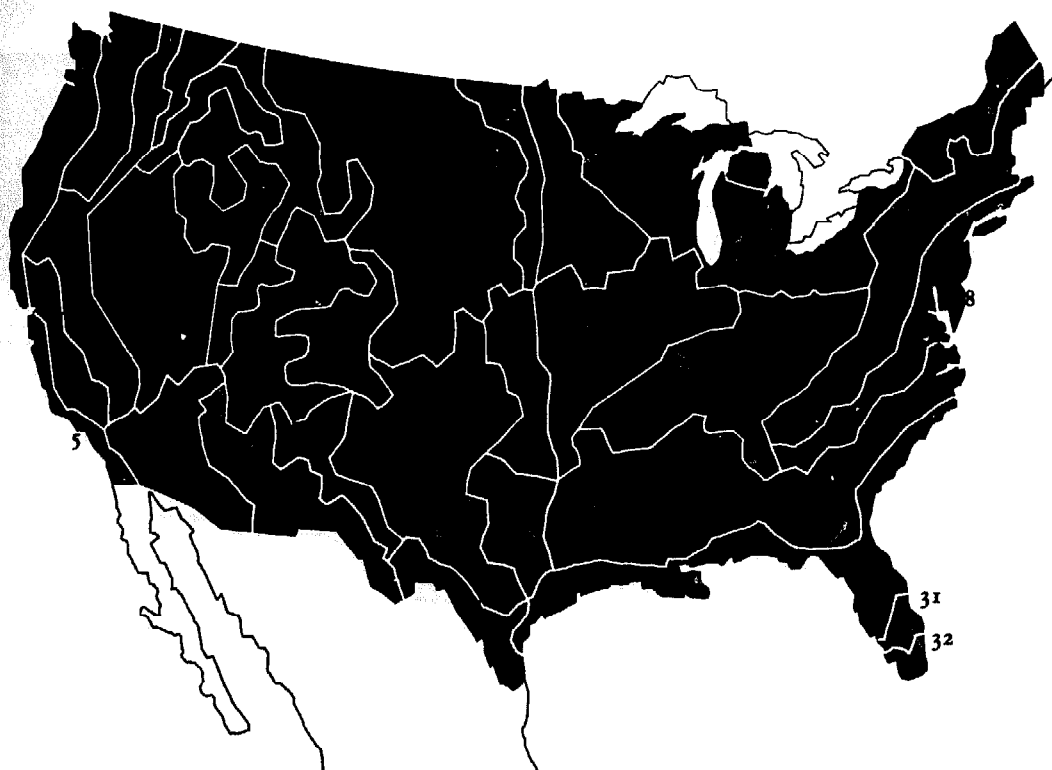
Region 28 Warmer than Region 27 with possibility of drought at end of summer. Moderate winters.

Region 29 Warm summers and abundant rainfall - 45 to 60 inches.

Region 30 Hot in summer. Short winter with much rain.

Region 31 Warm summers, but killing annual frosts. Rainfall: about 50 inches.

Region 32 No killing frosts and only slight temperature variations. Rainfall: 50 to 60 inches.



Index

Figures in **bold** indicate a major reference.
Figures in *italics* indicate illustrations or illustrated text.

A

Acidity 16, 88-90
 and potatoes 132
Actinomyces 15
Aeration of soil 14, 15, 82
Alfalfa 48, 87
Algae 15
Alkalinity 16, 88-90
Alsike 87
Ammonia 11
Angelica 24, 192
Animals 73, 230-9
 in nature's cycles 8-9
 in the fruit garden 77
Anise 38, 192
Anthracnose
 grape 190
 melon 157
 pepper 139
Ants 14
Aphid
 cherry 172
 gooseberry 182
 strawberry 178
 deterrents 104
Apple mint 33, 198
Apples 168-70
 making cider 226-7
 varieties 41
Approach grafting 189
Apricots 42, 173
Artichokes
 Chinese 24, 163
 globe 34, 161-2
 Jerusalem 24, 163
Artificial light 72
Ascorbic acid 216
Asparagus peas 39, 116
Aspect 68
Axe 80

B

Bacteria 214
 in the soil 13, 84
 nitrogen-fixing 11, 15, 87
Bacterial blight 174
Bagging hook 80
Balfour method 230-1
Balm 31, 192
Barrel
 potato growing 134
 sauerkraut 215-6
 strawberry growing 177
Basil 33, 193
Bastard trenching 80-1

 deep bed 107
Bay 30, 193
Beans
 broad longpod 37, 117-8
 bush 37, 120
 butter 120
 cattle 117
 horse 117
 Lima 36, 120
 pole 37, 118-9
 soybean 36, 121
 tic 117
 salting 215-6
Beech hedges 243
Bees 238-9
 seasonal care 53, 56, 61, 65, 70-1
Beetle
 asparagus 150
 beet 151
 Colorado 135, 136
 cucumber 155
 strawberry 178
See also Pests, insect
Beet 22, 151
Big bud 184
Bin
 potato growing 134
 compost, *see Compost heap*
Biodynamic/French Intensive
 Method 105
See also Deep Bed Method
Bird control 105
 currants 184
 grapes 190
 peas 115
Bitumen after pruning 100
Blackberries 46, 176
 jelly 223
Blackcurrants 47, 183-4
 jelly 223
 wine 225
Blackfly 118
 deterrents 104
Black spot 190
Blanching
 cardoons 162
 cauliflower curds 127
 celery 144
 endives 160
 leeks 149
 seakale 131
 before drying 216
 before freezing 228
Blight
 cucumber 156
 potato 105, 135
 tomato 138
Blood meal 88
Blueberries 47, 186
Boiling 214
Borage 31, 193
Bordeaux mixture 105
Boron 88
 deficiency 129
Botrytis

 globe artichoke 162
 melon 157
Bowles mint 198
Bracken mulch 90, 103
Brassica 122-30
 holding-bed 126
 in a deep bed 108
 in 4 year rotation 68, 73
 saving seed 91
 through the year 52, 55, 56, 62, 64
Breeding
 chickens 233
 ducks 233
 geese 234
 pigeons 234
 rabbits 235, 236
Brick paths 242
Broad beans 37, 117-8
 intercropping 117
Broccoli 128
 purple hearting 34
 purple sprouting 34
 white sprouting 34
See also Calabrese
Brussels sprouts 27, 126
Bullfinches 77, 105
Burgundy mixture 105
Burnet 31, 194
Bush beans 37, 120
Butterfly, cabbage white 124

C

Cabbages 122-5
 Chinese 25, 125
 conical-hearted 27, 122
 red 27, 125
 round-hearted 27, 122
 sauerkraut 215-6
 Savoy 27, 125
 white 27, 215
Calabrese 34, 128
Calomine 123
Canker
 apple 169-70
 blueberry 187
 Hamburg parsley 145
 parsnip 142
Canning 214, 219-22
 times and temperatures 221
Cantaloupe, *see Melons*
Caper 194
Capsicums *see Peppers*
Caraway 38, 194
Carbon dioxide 11
Cardoons 25, 162
Carrots 22, 140
Casaba, *see Melons*
Catch crop 129
Caterpillars 104
 okra 164
 tent 187
Catmint 33, 198

vacant vegetable beds in winter prevents erosion and keeps the nutrients in the soil.

The garden needs rain in the spring and early summer and not too much rain in midsummer. Most of us have to give nature a hand and either dig irrigation furrows or get out the hose or watering can.

Sunshine

Some sunshine is important for all food-producing plants except mushrooms. Crops like sweet corn, eggplants, peppers, melons, tomatoes, cucumbers, peaches and grapes will not ripen without plenty of sun. In areas which get little sun you can, of course, grow these crops under glass or plastic and, if necessary, provide artificial heat. On the other hand some crops cannot take too much sun, lettuce plants go to seed and die when summer heat sets in.

Wind

Many plants suffer badly in windy positions. As well as the strength of the wind itself there is the problem that wind exaggerates the effect of frost. In an area of high winds, try to utilize sheltered spots, or build windbreaks.

The USDA Regions

CLIMATE REGIONS

Region 1 Cool, dry summers with frequent fogs. Heavy winter rainfall.

Region 2 Summers drier and warmer than Region 1. Average low temperatures 10° to 20° F.

Region 3 Hot, dry summers. Mild winters with 8 to 10 inches of rain. Low temperatures: 22° to 24° F.

Region 4 A very mountainous region. Conditions vary greatly according to elevation.

Region 5 Summers on the coast dry and cool, but warmer inland. 11 inches of rainfall in the valleys, 30 inches in mountains.

Region 6 Summers warm. Winter temperatures average 10° to 15° F. Most rain in winter and spring.

Region 7 Summers warm. Winter temperatures range from 0° to 15° F. Rainfall: 10 to 20 inches.

Region 8 Semi-arid - hot summers and cold winters with temperatures between 0° and -10° F.

Region 9 Cold winters. Hot summer days with frosty nights.

Region 10 Scorching hot with a rainfall of 3 to 10 inches.

Region 11 Same as Region 9, but hotter.

Region 12 Elevation and exposure variations mean big differences in rainfall and temperature.

Region 13 Similar to Region 12, but temperatures at same elevations 7° F hotter on average.

Region 14 Similar to Regions 12 and 13 but warmer.

Region 15 Moderately warm summers, but extremely cold winters.

Region 16 Dry farming area, warmer than Region 15. Rainfall 12 to 22 inches.

Region 17 Dry and hot with 12 to 22 inches of rainfall but excessive evaporation.

Region 18 Fairly humid with cold, dry winters.

Region 19 Sudden variations in winter temperature. Hot winds in summer.

Region 20 Transition between dry farming regions to the west and humid climate of eastern Texas.

Region 21 Cold winters with drying winds. The 20 to 30 inches of rain comes mostly in summer.

Region 22 Prairie country with cold drying winter winds. Rainfall: 30 to 40 inches.

Region 23 East warmer and more humid than west, which is similar to Region 21.

Region 24 Moisture-laden atmosphere, 30 to 40 inches of rainfall spread over the year.

Region 25 Warm summer with risk of drought. Moderate winter. Rainfall: 40 to 50 inches.

Region 26 Long days and cool nights in summer. Heavy snowfalls in winter.

Region 27 Abundant rain - 35 to 50 inches - throughout the year. Heavy snow in colder areas.

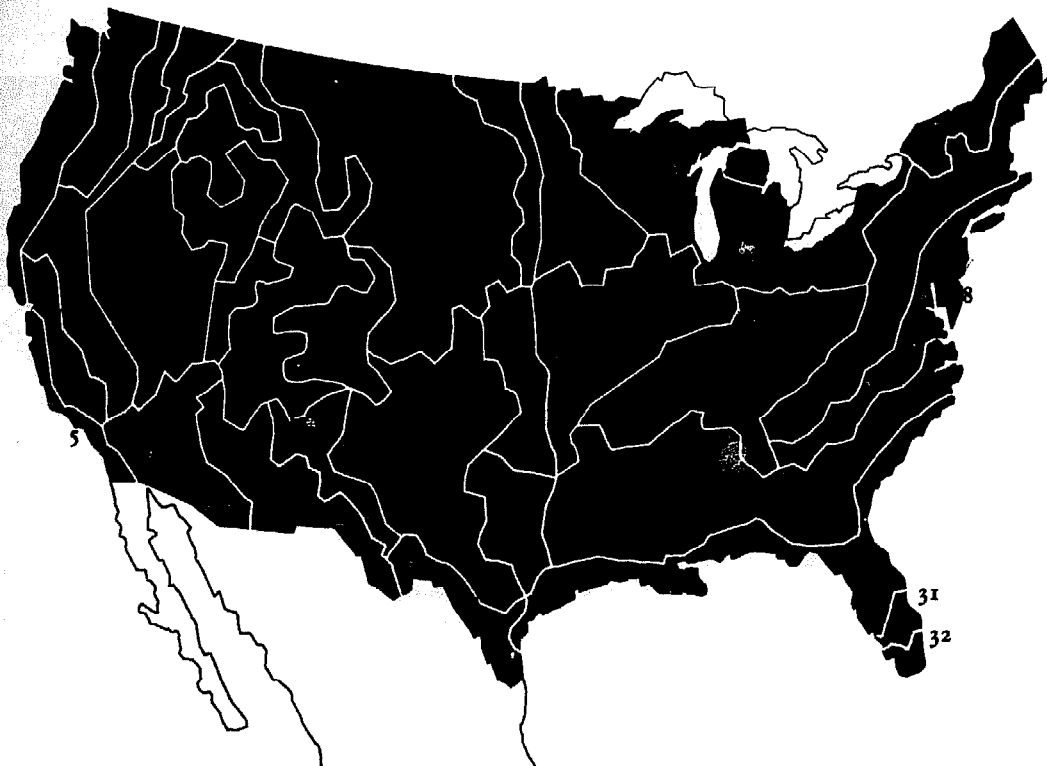
Region 28 Warmer than Region 27 with possibility of drought at end of summer. Moderate winters.

Region 29 Warm summers and abundant rainfall - 45 to 60 inches.

Region 30 Hot in summer. Short winter with much rain.

Region 31 Warm summers, but killing annual frosts. Rainfall: about 50 inches.

Region 32 No killing frosts and only slight temperature variations. Rainfall: 50 to 60 inches.



Cauliflowers 34, 127, 151
 Cawl 148
 Celeriac 24, 144
 Celery 24, 58, 62, 143-4
 self-blanching 24, 144
 Celtuce 24, 159
 Chadwick, Alan 10, 106, 151
 Chan, Peter 106, 107
Chenopodiaceae 151-3
 Cherries 43, 172
 protecting 77
 Chervil 30, 195
 Chickens 230-3
 Chicken tractor 232
 Chicory 29, 159
 Chilies, *see* Peppers
 Chinese artichoke 24, 163
 Chinese cabbage 25, 125
 Chip grafting 99
 Chives 31, 195
 Chocolate spot 118
 Chutneys 214, 218-9
 Cider 226-7
 Citrus fruits 44-5, 179-81
 Clamping 136
 Clay soil 16
 breaking down 51
 drainage 240
 improving 140
 Clearing land 80
 Climate 69-70, 248-9
 Cloches 96
Clostridium botulinum 214
 Clover 15
 as green manure 48, 87
 Clubroot 73
 brassica 123-4
 Cobbett, William 76, 132
 Codling moth 169, 170
 Coffee substitute 161
 Cold frame 95
 through the year 52, 56, 60, 64
 ventilation 66
 Collard 27, 128
 Colorado beetle 135, 136
 Comfrey 13, 48, 86-7
 tea 103
Compositae 158-162
 Compost 84-6
 mushroom 166
 potting 92-3
 seed 92-3
 through the year 52, 56, 60, 64
 Compost heap 70-1, 84-6
 Concrete paths 242
 Coral spot 184
 Cordon fruit trees 76, 101
 Core borer, *see* Shoot borer
 Coriander 38, 195
 Corn salad or Lamb's lettuce 26, 159
 Cotton root rot 185
 Courgettes 35, 156
 Covelo Garden Project 75
 Cover crops 51
See also Green Manure

Cress 27, 131
See also Upland cress and Watercress
 Crotalaria 48, 87
 Crown
 asparagus 150
 rhubarb 165
Cruciferae 122-31
 Cucumbers 35, 154-5
 greenhouse 209-10
 pickled 218
 saving seed 91
Cucurbitaceae 154-7
 Currants 47, 183-4
 Cuttings
 blackcurrant 183
 grape 188-9
 hardwood 94-5
 softwood 94-5
See also Propagation
 Cut worm
 cabbage 124
 French bean 120
 melon 157
 pepper 139
 tomato 138

D

Damping-off disease 144
 Dandelions 29, 161
 Decomposition 84
 Deep Bed Method 106-12
 theory 9-10
 through the year 51, 54, 58, 62, 63
See also individual vegetables and fruits
 Dicotyledons 19-20, 146
 Dieback 184
 Digging 81-3
See also Bastard trenching
 Dill 38, 196, 216
 Diseases 105
See also individual vegetables and fruits
 Ditches 240
 Doubleday, Henry, Research
 Association 123
 Double-digging, *see* Bastard trenching
 "Double working" pears 171
 Downy mildew 147
 Drainage 240-1
 for fruit trees 76, 168
 Drains 240
 Drywells 240-1
 Drying 214, 216-8
 Dwarf beans 37, 120
 Dwarf fruit trees 76, 169
 semi-dwarf 76

E

Earworm 164

Ecological balance 8-9, 14-15
 Eel worm
 avoiding 73
 onion 147
 potato 135
 Eggplants 35, 139
 greenhouse 211
 Egyptian onions, *see* Tree onions
 Endives 29, 160
 Enzymes 214
Ericaceae 186
 Erosion 16, 69
 Espalier fruit trees 76, 101

F

Feeding
 bees 239
 chickens 232-3
 ducks 233-4
 geese 234
 pigeons 234
 rabbits 236-7
 Fences 52, 69, 243-4
 wattle 244
 Fennel 30, 196
 Florence 26, 145
 Fertility 6, 80-90
 Fertilization 20
 Fertilizer 87, 90
 elements in organic fertilizers 90
See also Manure, Green manure, Compost and Mulch
 Figs 47, 185
 greenhouse 212
 Fire blight 171
 Fish meal 88
 Flea beetle
 cabbage 124
 pepper 139
 radish 130
 rutabaga 129
 seakale 131
 turnip 129
 Flocculation, *see* Lime
 Florence fennel 26, 145
 Fly
 carrot root 141
 onion 147
 Foot rot 180
 Forcing
 chicory 159
 rhubarb 165
 seakale 131
 Forks 82
 Freezing 227-8
 soup 228
 tomatoes 138
 French Intensive Method 106
See also Deep Bed Method
 Frost 69, 248-9
 pockets 168
 Fruit 20-1, 40-7, 167-90

canning 220
making jams and jellies 222
Fruit cage 184
Fungi 15
See also Mushrooms
Fungus diseases 105

G

Gall weevil 124
Garlic 29, 196
Geese 234
Gherkins 155
pickled 218
Globe artichokes 34, 161
Gooseberries 47, 182
Gophers 104
Grafting 99
approach 189
chip 99
cleft 99
grapes 188-9
whip 90
Grapefruit 45, 181
Grapes 43, 188
greenhouse 212
wine 225-6
Grass 14, 15
Gravel 205, 242
Grease banding 104
apples 170
Greengages 42, 73
Greenhouses 203-12
planning 70, 71, 72
through the year 51, 53, 56, 61, 65
Green manure 13, 86-7
for potatoes 132
through winter 51, 63
Grindstone 246
Grossulariaceae 182
Guyot method 189-90

H

Halo blight 19
Hamburg parsley 22, 145
Hardening off 95
tomatoes 137
Haricot beans 120
Harvesting 63-66, 105
Hawthorn hedges 243
Hazel hedges 115
Heart rot 174
Heeling in 149
Herb garden
planning 75
raised bed 75
through the year 53, 57, 61, 65, 70-1
Herbs 21, 191-202
in a deep bed 110
drying 216-7

leaves 30-3
seeds 38
stems 24
See also individual herbs
Hilling up
celery 143-4
leeks 149
potatoes 134
sprouts 126
sweet corn 164
Hive 238-9
See also Bees
Hoe 102-3
Hoeing 63
Holding-bed 93
planning 70-1
for sprouts 126
through the year 52, 56, 58, 60, 64
Honey 238-9
making mead 227
Honeydew melon, *see Melons*
Hoppers 231, 233
Horse beans 117
Horseradish 23, 197
Hot-beds 96
Hot frame 95-6
ventilation 66
Howard, Sir Albert 84
Humus 14, 16
See also Compost, Green manure and Mulch
Hutches 235, 236
Hyssop 32, 197

I

Incubator 233
Indoor gardening 72
Inoculating soybeans 121
Insulation
of a greenhouse 206, 207
of a shed 245
Intensive gardening 71-2
See also Deep Bed Method
Intercropping 97
with broad beans 117
Iron deficiency 176

J

Jams, 222-3
Jeavons, John 107
Jellies 222-3
Jerusalem artichokes 24, 55, 163

K

Kale 27, 128
Killing

chickens 232
ducks 234
geese 234
pigeons 234
rabbits 237
Kohlrabi 25, 130
Kudzu 87
Kumquats 45, 180

L

Lamb's lettuce, *see Corn salad*
Layering 94-5
strawberries 177
Leaf blister mite 171
Leaf curl 173
Leaf miner
beet 151
celery 142-4
Leaf spot
artichoke 162
celery 144
peach 173
Leaf spot fungus 184
Leatherjackets 124, 125
Leeks 29, 57, 148
heeling in 149
Legumes
as green manure 87
See also Leguminosae
Leguminosae 13, 114-121
Lemon balm 33, 192
Lemon thyme 32, 202
Lemons 45, 181
greenhouse 212
See also Citrus fruits
Lentils 39, 116
Lespedeza 87
Lettuces 29, 158-9
greenhouse 211
saving seed 91
Liebig, Justus von 87
Lightning 12
Liliaceae 146-50
Lima beans 36, 120
Lime 16, 89
against clubroot 123
for peas 115
See also Acidity and Alkalinity
Limes 45, 181
Linseed oil 246
Loam 92-3
Loganberries 46, 176
Lovage 30, 197
Lucerne 87
Lupins 48, 87

M

Maggot 184
Magnesium 88

Malling, East, Research Station 169
 "Man" 245-6
 Mandarins 45, 180
 greenhouse 212
 Manganese 88
 deficiency 152
 Mange tous *see* Sugar peas
 Mangels 151
 Manure
 in autumn 63
 cow 88
 on the deep bed 106
 farmyard 97
 green 86-7
 human 90
 for potatoes 132
 water 103
 in winter 51
 Marjoram
 pot and sweet 32, 198
 wild (oregano) 32, 199
 Marrows *see* Squashes
 Mason jars 220
 Mattock 103
 Mead 227
 Medlars 40, 175
 Melons 34, 157
 cantaloupe 34
 casaba 34
 in the greenhouse 210
 honeydew 34
 netted 34
 Mexican bean beetle 119
 Mice 104
 Micro-organisms 12
 Mildew
 apple 170
 bean 118
 cucumber 155
 downy 147
 gooseberry 182
 pea 116
 powdery 178, 190
 squash 156
 Millipede 104
 Mini-greenhouses 97, 111-12
 ventilation 66
 Mint 33, 198
 Mold 214
 pepper 139
 strawberry 178
 Moles 104
 Molybdenum 88
 Monocotyledon 19-20, 146
 Moraceae 185-6
 Mosaic virus disease
 cucumber 155
 pole bean 119
 raspberry 176
 Moth
 cabbage 124-5
 codling 169-70
 pea 116
 Mounding 182
 Mulberries 47, 186

Mulch 103
See also Humus
 Mushrooms 36, 166
 indoors 72
 Mustard 38, 199
 as green manure 86
 Mycelium 166

N

Nasturtium 31, 199
 Nectarines 43, 173
 Nesting box
 duck 233
 pigeon 234
 New Zealand spinach 26, 152
 Nicotine mixture 104
 Nitrogen 87-8
 cycle 10-13
 fixation 11, 114
 "No-digging" 83

O

Okra 34, 164
 greenhouse 211
 Olive knot 187
 Olives 43, 187
 Onion fly 147
 Onions 29, 151, 146-8
 pickled 218
 pickling 148, 218
 shallots 29, 148
 spring 29, 148
 tree 29, 202
 Orange rust 176
 Oranges 179-80
 greenhouse 212
 varieties 44
 Oregano 32, 199
 Organic gardening 8
 Oxygen 11

P

Parsley 30, 200
 Hamburg 22, 145
 Parsnips 22, 142
 planting 55
 wine 224-5
 Paths 241-3
 Patio 71-2
 Peaches 43, 173
 greenhouse 212
 Peanuts 36, 121
 Pears 40, 171
 varieties 40
 Peas 39, 48, 114-16
 asparagus 116
 as cover crops 87

through the year 52, 56, 60, 64
 Peat 92-3
 bags 138
 Pea thrips 116
 Pectin 222-3
 Peppermint 33, 198
 Peppers, 35, 139
 blanching 216
 Chilies 35
 greenhouse 211
 Perennial plot 52, 56, 60, 64
 Pests
 animal 104-5
 insect 104
 pH index 89-90
 Phosphate 88
 Phosphorus 88
 Photosynthesis 10
 Phylloxera 188
 Phytophthora rot 171
 Pickling 214, 218
 Pickling onions 148, 218
 Pigeons 234
 Pigs 80
 Planning 67-78
 chart 78
 a deep bed 112
 a fruit garden 76
 a herb garden 75
 a large garden 73
 a medium-sized garden 72
 a small garden 71
 vegetable beds 73-5
 Planting out 54-8
 blackcurrants 183
 cauliflowers 127
 fig trees 185
 orange trees 180
 potatoes 134
 trees 98-9
 Plashing 243
 Plastic 55, 97
 greenhouse cover 205-6
 Pleasaunce 72
 Plums 42, 73, 174
 Pole beans 37, 118-9
 Pollination
 fruit free 77
 squash 156
 Pomes 21, 168-75
 Potash 88, 117
 Potassium 88
 Potato planter 134
 Potatoes 25, 132-6
 blight 135
 in 4 year rotation 68, 73
 through the year 51, 52, 53, 57, 61, 65
 Powdery mildew 178, 190
 Precipitation 11, 249
 Preserving 213-28
 Pricking out 92
 Propagation 91-9
 Propagators 92
 Protein 12
 Prunes 174

Pruning 54, 100-1
 apples 169
 blackcurrants 184
 cherries 172
 cordon 101
 espalier 101
 fan 101
 goblet 101
 gooseberries 182
 grapes 189
 peaches 173
 pyramid 101
 raspberries 176
 standard 101
 tools 100
 trees 100

Pumpkins 35, 155

Q

Quassia spray 116
 Quinces 40, 175

R

Rabbits 235-7
 Radishes 23, 130
 greenhouse 211
 Rainfall 11, 249
 Rake 93-4
 Raspberries 46, 175-6
 Red cabbages 27, 125
 Red currants 47, 184
 Red spider mite 182
 Reversion 184
 Rhubarb 25, 165
 canning 222
 through the year 51, 52, 56, 60, 64
 Rhubarb curculio 165
 Ring culture 138
 Roller 93
 Root fly
 cabbage 124
 Roots 14-15, 18
 Root stocks 99
 apple 169
 orange 179
 Root vegetables
 in 4 year rotation 74
 storing 105
 through the year 53, 57, 61, 65
 Rosaceae 168-178
 Rosemary 32, 200
 Rot
 brown 173
 lettuce 157
 strawberry 178
See also Foot rot
 Rotation
 of crops 73-5
 of strawberry beds 177

Rotary cultivators 82-3
 Ruby chard 153
 Runners 94-5
 strawberry 177-8
 Rust
 asparagus 150
 bean 118
 Rust fungus 142
 Rutabagas 22, 129
 Rutaceae 179-181
 Rye 48, 87

S

Sage 32, 200
 Salsify 23, 160
 Salting 214, 215-16
 Sandbox 244, 246
 Sandy soil 16
 for storing vine cuttings 188-9
 Satsumas, *see* Tangerines
 Sauerkraut 215-16
 Savory (Summer and Winter) 33, 201
 Savoys 27, 125
 Sawfly
 apple 169-70
 gooseberry 182
 Scab
 apple 169-70
 potato 170
 "Scaffold" 101
 Scion 99, 169
 Scorzonera 23, 160
 Scythe 80
 Seakale 25, 131
 Seakale beet, *see* Swiss chard
 Seasons 49-65
 Seaweed 88, 90, 150
 Seed 91-4
 pelleted 92, 151
 potatoes 133
 storing 105
 through the year 54-8
 Seed-bed 93
 brassica 122
 planning 70-1
 through the year 52, 55, 56, 60, 64
 Sewage sludge 88
 Shade 68
 from fruit trees 77
 Shallots 29, 148
 Shears 100
 Sheds 52, 70-1, 244-5
 Shoot borer
 currant 184
 Silage 237
 Silver leaf disease
 cherry 172
 plum and damson 174
 Skinning rabbits 237
 Slashers 80
 Slopes 69 *See also* Terracing
 Slugs 104

Smut
 onion 147
 sweet corn 164
 Snails 104
 Soil 13-16
 conditions 70
 for fruit trees 76-7
 greenhouse 206
 treatment 80-90
 Solanaceae 132-9
 Solanin 134
 Solar drier 217
 Sorrel 31, 201
 Sowing 93-4
 through the year 55, 59
 Soybeans 36, 121
 Spades 81-2
 Spearmint, *see* Mint
 Spinach 26, 152
 Spinach beet 26, 153
 Split pit 187
 Sprays 104
 Spring onions 148
 Sprouting potatoes 133
 "Squabs" 234
 Squashes 35, 156
 custard 35
 saving seed 91
 Staking
 peas 115
 pole beans 119
 tomatoes 137-8
 Standard fruit trees 76, 169
 Staphylococci 214
 Starter solutions 97
 for wine 224-5
 Sterilizing 214
 loam 93
 Storing 63-6, 105
 apples 170
 apricots 173
 beet 151
 cabbages 125
 carrots 141
 kohlrabi 130
 pears 171
 potatoes 136
 pumpkins 155
 salsify 160
 sprouts 126
 tomatoes 138 *See also* Preserving
 Stratifying
 blackberries 176
 Strawberries 46, 177-8
 greenhouse 212
 Stringing onions 148
 Sugar beet 151
 Sugar peas 39, 116
 Sulfur 88
 Summer savory, *see* Savory
 Sunshine 249
 Sweet corn 36, 163-4
 drying 216-17
 Swiss chard 25, 153
 Symbiosis 20

T

Tagetes minuta 86
 Tangerines 45, 180
 Tarragon 31, 202
 Terracing 241
 Thyme 32, 202
 Tic beans 117
 Tip-bearers 101
 Tomatoes 35, 137-8
 canning 220-1
 chutney 219
 greenhouse 209
 juice 222
 sowing seeds 91
 skinning 221
 varieties 35
 Tools 244-6
See also individual tools
 Top dressing 103
 Trace elements 88
 Tractor 82-3
 Training
 cucumbers 155
 grapes 190
 squashes 156
See also Pruning
 Transpiration 11
 Tree onions 29, 202
 Trenching
 asparagus 149-50

celery 143
 Tubers
 storing 105
 Turnips 23, 129

U

Umbelliferae 140-5
 Upland cress 27, 131

V

Vegetables 22-39, 113-166
 Vetch 48, 87
 Vine mite 190
 Vinegar 218
Vitaceae 188-90
 Volatile oil 200, 201, 217

W

Walls 69, 243
 Wart disease 135
 Wasps 104, 190
 Water 69
 cycle 11
 Watercress 27, 131
 Watering 102
 greenhouse crops 208

Watermelons 157
 Water table 240
 Weather 248-9
 Weeding 102-3
 Weevil
 apple blossom 169-70
 pea and bean 116
 Wheelbarrow 80
 Whetstone 246
 White currants 47, 184
 Wind 69, 248
 Window boxes and sills 71, 72
 Wine 223-6
 Winter cauliflowers 127
 Winter savory, *see Savory*
 Winter wash 54, 104
 Wire netting supports 115, 138
 Wire worm 120
 Woolly aphid 169-70
 Worms 15, 16
 Worthington, Jim 282-3

Y

Yeasts 15, 214, 224-5

Z

Zinc 88

Acknowledgments

Author's Acknowledgments

I would like to express my gratitude to the many people who have helped in the making of this book, particularly the staff of Dorling Kindersley, who have worked with great devotion and good will for many months – far beyond the call of ordinary duty. I would also like to thank the artists, for doing such excellent illustrations, and the people who live and work at my farm, for their help in carrying out the many experiments and trials that have provided information for the book. Lastly I would like to thank everyone who helped with advice, demonstrations and information, with special thanks to Lawrence D. Hills, Dr. Shewell-Cooper, the East Malling Research Station, the Covelo Garden Trust California, Ecology Action California, and many private gardeners in the United States, Britain, Italy and France.

JOHN SEYMOUR

Dorling Kindersley Limited
would like to thank the
following for their special
contributions to the book:

Michael Carlo
Georgina D'Angelo
East Malling
Research Station
Katherine Fenlaugh
Fred Ford
Ramona Ann Gale
Lesley Gilbert
K. Holmes of Cramers Ltd.
Sally Seymour
Dr W. E. Shewell-Cooper
Martin Solomons,
Mick Leahy, John Rudzitis
and the staff of Vantage
Alan Lynch, Geoff Smith
and the staff of Cowells

ARTISTS
David Ashby
David Bryant
Brian Craker
Julian Holland
Peter Kesteven
Robert Micklewright
Peter Morter
Nigel Osborne
Jim Robins
Malcolm Smythe
Eric Thomas